CONFIDENTIAL.

NOTES

ON THE

ROUTES FROM LAKE SUPERIOR TO THE RED RIVER,

AND

ON THE SETTLEMENT ITSELF,

COMPILED FROM REPORTS BY CAPTAIN PALLISER, PROFESSOR HIND, AND MESSRS. DAWSON AND NAPIER;

WITH

NOTES RELATING TO THE TRANSPORT OF TROOPS, &c.,

BY

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COMPILED IN THE TOPOGRAPHICAL DEPARTMENT OF THE WAR OFFICE, COLONEL SIR HENRY JAMES, R.E., F.R.S., DIRECTOR.

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PREFACE.

THE following Notes on the routes from Lake Superior to the Red River, and on the settlement itself, have been compiled from the reports of Captain Palliser, Professor Hind, and Messrs. Dawson and Napier.

The notes relating to the transport of troops, &c., are from the reports of Colonel Crofton and Captain (now General) Lefroy, R.A.

From Lake Superior to Rainy Lake there are two principal routes: one, "the Pigeon River Route," following nearly the line of the international boundary; the other, "the Kaministiquia Route," ascending the river of that name, and lying wholly within Canadian territory. From Rainy Lake to Red River there is only one canoe route, that by the Lake of the Woods and the Winipeg River.

The *Pigeon River Route* is shorter than the *Kaministiquia Route* by about 43 miles, and is said to be easier; the portages are also better, but many of them are on the American side of the line, especially the "Grand Portage," 8¼ miles long, from Lake Superior to Pigeon River.

The *Kaministiquia Route* is now in course of improvement by the Canadian Government, and it is understood that the road from Thunder Bay to Dog Lake, which avoids the numerous portages on the Kaministiquia River, has been completed and is now open for traffic; if this be so the difficulties of transit will be greatly lessened. A road has also been opened from Red River to the north-west angle of the Lake of the Woods, sufficiently good to allow of the mails being carried over it on horse-back; it is doubtful, however, whether much use could be made of this road during the early spring, from the swampy nature of the ground.

Complete itineraries of the two routes are given as far as Rainy Lake, in case it should be considered advisable to use them both for the conveyance of supplies to Fort Francis, a post which might be conveniently used as an intermediate depôt between Lake Superior and Red River.

The first part of these Notes contains itineraries of the "Pigeon River" and "Kaministiquia" routes, with detailed descriptions of the portages, rapids, lakes, and general character of the country passed through; also information relating to the district through which the proposed road from the Lake of the Woods to Red River passes, and to the road from Thunder Bay to Dog Lake.

The second part gives a description of the Red River Settlement, its population, climate and products, and of the Lac la Pluie Indians.

The third part consists of extracts from reports by Colonels Crofton and Captain (now General) Lefroy on the arrangements for transporting troops, &c., from Canada to Red River.

These notes have been compiled by Captain Charles W. Wilson, R.E., of the Topographical Department of the War Office.

HENRY JAMES,
Colonel R.E.

31*st March*, 1870.

PART I.

PIGEON RIVER ROUTE.

TABLE of the Portages, Décharges, Rapids, Lakes, Lake Straits, and Navigable Channels on the Pigeon River Route (the old North-West Company's Route) from Lake Superior to Rainy Lake, showing their Lengths and Distance from Lake Superior.*

Portages.	Length in Stat. Miles.	Décharges.	Length in Stat. Miles.	Rapids.	Length in Stat. Miles.	Lakes.	Length in Stat. Miles.	Lake Straits and Navigable Channels.	Length in Stat. Miles.	Distance from Lake Superior. Statute Miles.	Remarks.
										0·00	
1. Grand Portage ...	8·16	...	...	...	...	...	...				
								1. Pigeon R....	1·50	8·16	
2. Partridge Portage	0·25	...	...	...	...	...	...			9·66	
								2. Pigeon R....	4·25	9·91	Strong current. Canoes poled up part of the way.
		1. Décharge	0·25	...	...	...	...			14·16	
								3. Pigeon R....	1·75	14·41	
		2. Décharge	0·35	...	...	...	...			16·16	
								4. Pigeon R....	3·13	16·51	
3. Fowl Portage ...	1·13	...	...	...	...	...	...			19·64	
						1. Fowl Lake ...	4·55			20·77	
4. Moose Portage ...	0·41	...	...	...	...	...	...			25·32	
						2. Moose Lake ...	4·25			25·73	
5. Great Cherry Portage	0·48	...	...	...	...	...	...			29·98	
						3. Lake	0·25			30·46	
6. Mud Portage ...	0·15	...	...	...	...	...	...			30·71	
						4. Lake	0·39			30·86	
7. Lesser Cherry Portage	0·13	...	...	...	...	...	...			31·16	
						5. Mountain Lake ...	7·81			31·29	
8. Watap Portage ...	0·30	...	...	...	...	...	...			39·10	
						6. Watap Lake ...	3·70			39·40	
9. Great New Portage	1·46	...	...	...	...	...	...			43·16	
						7. Rose Lake ...	3·00			44·56	
10. Portage	0·01	...	...	...	...	...	...			47·56	4 feet fall.
						8. Mud Lake ...	2·62			47·67	
11. Portage	0·21	...	...	...	...	...	...			50·19	
						9. South Lake ...	2·84			50·40	
12. Height of Land Portage	0·26	...	...	...	...	...	...			53·24	
						10. Gun Flint Lake E.	2·77			53·50	
		3. Décharge	0·01	...	...	...	...			56·27	4 feet fall.
						11. Gun Flint Lake W.	8·92			56·28	
				1. Rapid	0·01	...	...			65·20	2 feet fall. North canoes let down by line.
								5. Lake Strait	0·25	65·21	
13. Little Rock Portage	0·02	...	...	...	...	...	...			65·46	
								6. Lake Strait	0·75	66·48	
				2. Rapid	0·01	...	...			66·23	
								7. Lake Strait	0·25	66·24	
14. Mill Fall Portage	0·06	...	...	...	...	...	...			66·49	
								8. Lake Strait	0·25	66·55	
15. Island Portage ...	0·29	...	...	...	...	...	...			66·80	
						12. Lake	1·35			67·09	
				3. Rapid	0·02	...	...			68·44	3 ft. fall, 2 ft. deep. North canoes let down by line.
						13. Lake	0·85			68·46	
				4. Rapid	0·07	...	...			69·31	5 ft. fall, 2 chs. wide. North canoes let down by line.
								9. Lake Strait	0·75	69·38	
				5. Rapid	0·05	...	...			70·13	4 ft. fall, 25 ft wide. North canoes let down by line
								10. Lake Strait	0·50	70·18	
				6. Rapid	0·04	...	...			70·68	3 ft. fall. North canoes let down by line.
								11. Lake Strait	0·12	70·72	
				7. Rapid	0·01	...	...			70·84	1 ft. fall. Run by loaded North canoes.
								12. Lake Strait	0·20	70·85	
				8. Rapid	0·01	...	...			71·05	1 ft. fall. Run by loaded North canoes.
								13. Lake Strait	0·45	71·06	
				9. Rapid	0·02	...	...			71·51	2½ ft. fall.
						14. Lake	5·35		0·70	71·53	
		4 Décharge	0·05	...	...	...	...			76·88	5 feet fall.
								14. Lake Strait	...	76·93	
16. Portage	0·01	...	...	...	...	...	...			77·63	
						15. Lake Seiganagah	10·07			77·64	
17. Portage	0·01	...	...	...	...	...	...			87·71	
						16. Swamp Lake ...	0·82			87·72	
18. Swamp Portage...	0·24	...	...	...	...	...	...			88·54	
						17. Cypress Lake ...	5·35			88·78	
19. Portage	0·02	...	...	...	...	...	...			94·13	
						18. Knife Lake ...	10·70			94·15	
20. Portage	0·04	...	...	...	...	...	...		0·20	104·85	
								15. Lake Strait	...	104·89	
21. Portage	0·09	...	...	...	...	...	...			105·09	
						19. Lake	0·60			105·18	
22. Carp Portage ...	0·15	...	...	...	...	...	...			105·78	
						20. Birch Lake ...	4·00			105·93	
23. Portage	0·11	...	...	...	...	...	...			109·03	
						21. Basswood Lake ...	16·00			110·04	
24. Portage	0·10	...	...	...	...	...	...			126·04	
								16. Lake Strait	0·25	126·14	
25. Fir Portage ...	0·20	...	...	...	...	...	...			126·39	
								17. Lake Strait	0·22	126·59	
				10. Rapid	0·04	...	...			126·81	3 feet fall.
								18. Lake Strait	0·35	126·85	
				11. Rapid	0·02	...	...			127·20	2 feet fall.
								19. Lake Strait	1·50	127·22	
26. Portage	0·07	...	...	...	...	...	...			128·72	
						22. Lake	0·65			128·79	
27. Portage	0·09	...	...	...	...	...	...			129·44	
						23. Crooked Lake ...	16·80			129·53	
28. Curtain Fall Portage	0·10	...	...	...	...	...	...			146·33	

* The distances are from the International Boundary Survey—made according to the 7th Article of the Treaty of Ghent.

TABLE of the Portages, &c.—*continued.*

Portages.		Décharges.		Rapids.		Lakes.		Lake Straits and Navigable Channels.		Distance from Lake Superior.	Remarks.
	Length in Stat. Miles.		Length in Stat. Miles.		Length in Stat. Miles.		Length in Stat. Miles.		Length in Stat. Miles.	Statute Miles.	
				12. Rapid	0·33	...	...	..	...	140·43	3 feet fall.
						24. Iron Lake ...	4·50	...	...	140·46	
29. Bottle Portage ...	0·25	...	...	...	...	...	...	...	...	150·96	
						25. Nequaquon Lake	22·10	...	...	151·21	
30. Portage	0·12	...	...	...	...	...	...	...	...	173·31	
						26. Lake	5·60	...	...	173·43	
31. Portage	0·15	...	...	...	...	...	...	...	...	179·03	
								20. Lake Strait	0·50	179·18	
32. Portage	0·04	...	...	...	...	...	...	...	...	179·68	
								21. Loon's Narrows	7·00	179·72	
						27. Sandpoint Lake...	9·67	...	...	187·32	
						28. Namenkan Lake	5·20	...	...	196·99	
33. Nut Portage ..	0·08	...	...	...	...	...	...	...	...	202·19	
34. Portage	0·14	...	...	...	...	...	...	22. Lakelet ...	0·25	202·27	
						...	...	...	...	202·52	
								23. Lake Strait	5·20	202·60	
Total... ..	15·33	Total ...	0·66	Total...	0·33	Total... ...	160·62	Total ...	30·02	207·86	Statute miles to Rainy Lake.

SYNOPSIS of the foregoing Table of the Pigeon River Route.

	Statute Miles.	
Land Carriage	15·33	
Décharges	0·66	16·32 stat. miles Interrupted Navigation.
Rapids	0·33	
Lakes	160·62	191·64 stat. miles Navigable Water.
Lake Straits	30·02	
Aggregate distance	207·86	from Lake Superior to Rainy Lake.

Distance from Lake Superior to Rainy Lake, *viâ* the Kaministiquia route = 263·34 statute miles.

PIGEON RIVER ROUTE.

THE portages on this route are chiefly on the American side of the frontier line. Grand Portage Bay affords a sufficiently safe harbour for small vessels, being very shallow, however, for some distance out from the shore.

At the head of the bay commences the Grand Portage, which is 8 miles 13 chains in length; without any difficulty and with very little expense it might be made suitable for waggons, but at present it is only a rough foot-path. As it and Grand Portage Bay are altogether within the United States territory, it is perhaps needless to propose any improvements that might be made in them. This portage is unavoidable, as Pigeon River, for 16 miles from its mouth, is quite unnavigable, from the numerous falls and rapids in it. An ox team is employed by the Americans in forwarding supplies.

From the end of this portage there is $1\frac{1}{2}$ miles of still water to Partridge Portage, which is 445 yards in length. The path is on the American side of the boundary line, as it is also at many other places along this route. In these cases paths should be sought for on British territory, and which could be obtained, as well as we could observe, without much difficulty.

Above Partridge Portage the river is deep and wide, with a moderate current for $3\frac{1}{2}$ miles; but from this for 1 mile to the semi-décharge the river is shallow and the current very strong; so much so, that canoes have to be poled up.

At this semi-décharge the path is on the British side, and is short but rough. When the water is high, no semi-décharge is required; but at the time we passed, the water here and in all the rivers and lakes was peculiarly low, the high-water mark appearing to be 4 feet above the present level.

The distance to the next semi-décharge is 2 miles, in which length there are no obstructions.

The second semi-décharge is about 30 chains long; in going down stream the portage need not be made; the path is on the American side.

Between this and Fowl Portage, a distance of $3\frac{1}{2}$ miles, the river is quite navigable.

Fowl Portage is 2,000 yards long, and is pretty level except at the west end, where it is very precipitous. The boundary line runs along the path, as it does also at some other portages.

We here enter on Fowl Lake, which is $4\frac{3}{4}$ miles long; in the middle there is a narrow strait about 10 chains wide and 30 chains long, part of it being rather shallow; the other parts of the lake are 1 mile wide on an average.

At the end of it is Moose Portage, 721 yards long; the path is the boundary line.

Moose Lake is 4¼ miles long, with an average width of half a mile; it is very deep, and is never frozen over till late in the season, and the ice is not broken up till long after that in the other lakes.

Great Cherry Portage is the next; it is 844 yards long, leading to a small lake quarter of a mile long, at the end of which is Mud Portage, 265 yards long; and between it and the lesser Cherry Portage there is another small lake 15 chains long.

On these three portages the boundary line, as it appears from the map, runs on the paths, although the lakes are connected by creeks. The paths are tolerably good.

We then come to the beautiful Mountain Lake, which is 7¾ miles long and three-quarters of a mile broad, deep, and navigable for boats of any size.

Watap Portage, 539 yards long, lies between it and Watap Lake; the path is the boundary line.

Watap Lake is a narrow strip of water 5¾ miles long and about 12 chains wide, sufficiently deep throughout the entire length for any kind of craft.

The Great New Portage is 2,379 yards long; it is rather uneven, and is crossed by some small creeks; the boundary line is on it.

We now arrive at Rose Lake, which is separated from Arrow Lake by a narrow neck of land.

Arrow Lake is 16½ miles long, and has an average width of 1 mile.

Rose Lake is 3 miles long, and averages three-quarters of a mile across; it is deep, and well sheltered on all sides.

At the end there is a portage which is only 20 yards long, and on the American side.

Mud Lake is 2½ miles long and a quarter mile wide, and from 3 to 4 feet deep, with a soft muddy bottom; the water having the peculiar property of retarding the canoe, similar to that of the Viscous Lake on the Kaministiquia route.

Between it and the next lake there is another portage 380 yards in length, and is the boundary line, the present path being tolerably good and level.

South Lake is the last on the east side of the Height of Land; it is 2¾ miles across to the Height of Land Portage; the lake is about three-quarters of a mile wide, and not more than 4 feet deep along the canoe route, the bottom consisting of very soft mud.

The Height of Land Portage is 468 yards long, and is one of the best on the route.

We enter a lake now which is the head of the Winnipeg water-shed; having no name, it may be considered part of Gun Flint Lake, with which it is connected by a strait 2½ miles long, and varying from 3 to 10 chains in width. The traverse across this lake is 1¾ miles long. Near the middle of the strait there is a semi-décharge; it is but 20 yards long, with about 4 feet fall; when the water is high the rapid could be run by canoes even when loaded.

Gun Flint Lake, from the end of the narrow strait to Little Rock Portage, is 7 miles long, and has an average width of 1 mile; it is a fine open sheet of water of considerable depth. Before arriving at Little Rock Portage there is a rapid of 2 feet fall, down which the canoes were lowered by ropes; the rapid is caused by boulders of various sizes in the bed of the stream, but which might doubtless be removed.

Little Rock Portage is only 33 yards long; it is, as its name implies, over a rock, which is very steep on the west side.

From this to Mill Fall portage is a mile; the river is about 6 chains wide; at the end there is a rapid with a fall of 3 feet, the channel being filled up very much with boulders, so much so, that the canoes were let down with great difficulty.

Mill Fall Portage, of 110 yards in length, is over a very rugged rock on the American side.

The next portage is a quarter of a mile further on; it is 509 yards long, over an island; the path is very good and level except at the ends, where it is rather steep and the landings are bad.

This river, or chain of lakelets, is 12 miles long from Gun Flint Lake to Lake Seiganagah; for 4 miles below the last-mentioned portage it is full of large boulders, which make the navigation of it difficult; there are in this length six rapids, varying from 5 feet to 1 foot fall, at four of which the canoes had to be carefully let down by ropes.

From thence to the semi-décharge of 100 yards in length and 5 feet fall, which is 1 mile from the end, the navigation is good. At the mouth of this river there is a portage, which is 30 yards long, over a rocky point on the American side.

We now enter Lake Seiganagah, the route through which follows the boundary line or nearly so, and is 9 miles in length. The greatest length of this lake is 12 miles, and the greatest width 6 miles. It is full of islands, from which it derives its names, affording good shelter to canoes, at the same time not impeding the navigation for large boats.

After passing through a short channel 12 chains wide we enter Swamp Lake, which is

2¼ miles long, and averaging 30 chains wide; in it there is a small portage 20 yards long; the channel being only about 3 feet wide and very shallow. The water in the western portion is higher by about 1 foot than that in the other; the waters of Lake Seiganagh must therefore find an exit elsewhere.

Swamp Portage is 423 yards longs, on which is the boundary line; the path is very good, except at the east end, where it is swampy, the landing there being exceedingly bad.

Cypress Lake, the next we enter on, is a long narrow lake 5¼ miles long by a quarter of a mile wide, and of sufficient depth. There is a portage at the end 47 yards in length; the path is very good, and is on the British side of the boundary line.

Knife Lake, the next on the route, is of a very irregular shape; the course follows the boundary line for 8 miles, when it then diverges to the north. When the water is high the course may continue along the boundary line the whole way, as it is shorter than the other; but when the water is low the narrow channel is full of rapids, and becomes unfit for the navigation of large canoes, and then the northern course on British territory, as shown by the red-dotted line on the map, which we took, is much preferable.

The first portage, three-quarters of a mile from the boundary line, is rather bad; it is 700 yards long, and is very rough and hilly.

After passing through a lakelet three-quarters of a mile long by a quarter of a mile wide, we come to the next portage, which is a short one, 60 yards long.

The upper portion of Birch Lake is then entered, and the course is continued in a south-westerly direction for 4¼ miles till it reaches the boundary line, along which it afterwards goes.

Half a mile further on the Carp Portage is reached; it is 275 yards in length, the path is very good indeed, but forms the boundary line, as it appears from the map, although there is a channel close by which would have been the more natural one.

The course through the other portion of Birch Lake is 4 miles long, along which the water is deep enough for any kind of boats.

At the entrance to Basswood Lake there is a portage 196 yards long on the British side of the boundary line.

Basswood Lake, perfectly navigable for small steamers, is a large lake of most irregular form, and containing many islands. The usual course through it lies along the boundary line, and is 17½ miles long. At the end there are two rapids of considerable fall, a quarter of a mile asunder, which are avoided by portages; the first one, of 190 yards in length on the American side, is pretty good, as far as could be seen. The next portage, the Fir, is 350 yards long; the path is the boundary line; it is over very rocky ground, and rises considerably in the middle. After passing this portage there are in the first mile two rapids, one of 3 feet fall, the other of 2 feet, but which are easily run.

The channel is not more than about 10 chains wide, and continues of this width for 7½ miles.

Two miles below the last rapid is a portage 166 yards long over a high rocky point on the American side.

Three miles further down the channel Crooked Lake, which fully deserves its name, is fairly entered on. The course follows the boundary line through it, and by its windings is 14 miles in length, though the absolute length of the lake is but 10. The navigation is somewhat intricate, at the same time, quite sufficiently good for even boats of large dimensions.

Curtain Fall Portage is 183 yards long; the path is rather bad, being carried over a hill, and is very rough indeed; it is on the American side. Just below it there is a rapid of about 3 feet fall, which is run by canoes without difficulty. Iron Lake, the next in succession, is a small lake full of islands; the usual canoe route through it, which is also the boundary line, being 4½ miles long; the water was of good depth the entire way; at the east end, where it becomes like a river, there is a strong current, but which canoes or boats when ascending can easily overcome.

Bottle Portage is 448 yards long; the ground is very level except at the ends, which are rather steep.

There is a long stretch 22 miles in length now of navigable water through Nequawquon Lake, the course following generally the boundary line, except about the centre of the lake, where it keeps to the south of the large island.

At the south-west end there is a portage 217 yards long on the American side.

After passing through a small lake 4 miles long by the course, a narrow channel called Loon's Narrows is entered. One and three-quarter miles from the commencement there is a portage of 263 yards on the American side.

Half a mile from this there is another portage 67 yards long, also on the American territory. Below these portages the current is very strong, and at the bend the river is very shallow, and the bed covered with small boulders.

As the water was very low at the time we passed along, it was confined to a channel from two to four chains in width for a distance of 6 miles, meandering through a valley which in times of high water is covered.

Sand Point Lake may be said to commence here. It is 9½ miles long, and down the centre is the course and boundary line; it is free from any kind of obstruction to good navigation. It is connected with Namcukan Lake by a strait 16 chains wide.

From this through Namcukan Lake there are two courses to Rainy Lake, the one following the boundary line by the Kettle Falls Portage, of 127 yards in length, the other by the eastern channel; on it there are two very short portages, and the course is much shorter than the former; from the cursory examination I was enabled to make, it appears greatly superior to the Kaministiquia route.

It is 63 miles shorter than the other. There are fewer portages, all much shorter, with the exception of the Grand Portage; and none of them are nearly so bad as the Savanne, Prairie, or Great Dog Portages. There are very much fewer rapids, and which are all more easily run. Excepting Pigeon River, it consists of a chain of lakes the whole way connected by short channels, in few of which only the current is at all strong.

THE KAMINISTIQUIA ROUTE.

TABLE I.

TABLE showing the Heights and Distances of the different Breaks which occur in the Hudson's Bay Canoe Route between Fort William, Lake Superior, and Fort Garry, Red River; also their Levels above the Datum of Lake Superior, and Distance established continuously from the Mouth of the Kaministiquia River.

	NAME.	Number of Portage.	Number of Discharges.	Height.	Length.	Reduced Level.	Distance from Lake Superior.	REMARKS.
				′ ″	Ms. Chs.	′ ″	Ms. Chs.	
ction I.	Lake Superior	..	..	..	..	..	..	Mouth of the Kaministiquia River.
	Point du Meuron—Current	..	..	..	..	4·00	12 00	Navigable to this point. Rapids commence.
	1st Rapid	..	..	2·50	..	6·50	..	For 9 miles sufficient water for a steamer.
	Current to foot of 2nd Rapid	..	..	1·50	..	8·00	..	
	2nd Rapid	..	..	3·00	..	11·00	..	
	3rd Rapid	..	..	1·50	..	12·50	..	Almost continuous Rapids. Poled up short intervening reaches of still water. The depth of water at the Rapids did not exceed from 1 to 2 feet. Canoes can be poled up with ease.
	4th Rapid	..	..	3·50	..	16·00	..	
	5th Rapid	..	..	3·00	..	19·00	..	
	6th Rapid	..	..	3·00	..	22·00	..	
	7th Rapid	..	..	3·60	..	25·60	..	
	8th Rapid	..	..	5·00	..	30·60	..	
	9th Rapid	..	..	2·00	..	32·60	..	
	10th Barrisseau—Semi-discharge	..	1	5·10	..	37·70	..	Portage about 15 chains. Canoes poled up light.
	11th Rapid	..	..	2·00	..	39·70	..	Shoal water. Canoes poled all the way.
	12th Rapid	..	..	2·50	..	42·20	..	
	Current, 3 miles	..	..	1·50	..	43·70	..	
	13th Rapid	..	..	6·00	..	49·70	..	
	14th Rapid	..	..	3·50	..	53·20	25 53	Foot of Kakabeka Falls Portage.
	Kakabeka Falls	1	..	119·05	0 40	172·25	26 13	This includes the rapids at the head of Falls.
	Current to foot of Ecarté	..	..	0·50	0 10	172·75	26 23	
	Ecarté Portage	2	..	62·65	0 37	235·40	26 60	The Ecarte is a succession of cascades. Very rough strong current. Deep water.
	Current to foot of Nicolet	..	..	1·50	2 70	236·90	29 50	
	Nicolet Portage	3	..	6·59	0 6	243·49	29 56	
	Rapids	..	..	5·70	0 50	249·19	30 26	Canoes towed up by line from shore.
	Currents to next Portage	..	..	0·50	0 54	249·69	31 00	Canoes poled up. Shoal water.
	Portage 3rd above Kakabeka	4	..	12·62	0 8	262·31	31 08	Portage rough, rocky.
	Do. 4th do.	5	..	6·90	0 12	269·21	31 20	„ „
	Current to foot of Makomaw	..	..	0·25	0 15	269·46	31 35	River 2 chains wide. Shores rocky.
	Makomaw or Knife Portage	6	..	19·40	0 5	288·86	31 40	Sharp rocks. Bad approaches.
	Rapid	..	..	3·00	0 7	291·86	31 47	Towed up. 150 feet wide.
	Current	..	..	·25	0 12	292·11	31 59	
	Rapid	..	..	4·00	0 3	296·11	31 62	Towed up.
	Current	..	..	·25	0 5	296·36	31 67	
	Rapid	..	..	3·00	0 3	299·36	31 70	3 chains wide. Towed up.
	Current	..	..	·33	0 30	299·69	32 20	3 chains wide.
	Rapid	..	..	4·00	0 3	303·69	32 23	Towed up.
	Current	..	..	3·00	0 61	306·69	33 04	Poled up.
	Current to foot of Semi-discharge	..	..	·50	0 15	307·19	33 19	„

TABLE showing the Heights and Distances of the different Breaks which occur in the Hudson's Bay Canoe Route, between Fort William, Lake Superior, and Fort Garry, Red River, &c.—*continued.*

	NAME.	Number of Portage.	Number of Discharges.	Height.	Length.	Reduced Level.	Distance from Lake Superior.	REMARKS.
				′ ″	Ms. Chs.	′ ″	Ms. Chs.	
	Semi-discharge	..	2	3·00	0 8	310·19	33 27	Baggage portaged. Canoes poled up light.
	Current to next Rapid	..	..	2·00	1 23	312·19	34 50	Poled up.
	Rapid	..	..	4·00	0 4	316·19	34 54	2 chains wide.
	Current	..	..	·50	2 00	316·69	36 54	Poled and paddled.
	Rapid	..	..	3·50	0 6	320·19	36 60	Poled.
	Current	..	..	·25	0 60	320·44	37 40	„
	Rapid	..	..	1·50	0 2	321·94	37 42	„
	Current	..	..	·25	0 26	322·19	37 68	„
	Long Rapid	..	..	7·00	0 40	329·19	38 28	Poled up. River 2 chains wide.
	Current	..	..	2·00	0 25	331·19	38 53	„
	Current	..	..	1·00	0 72	332·19	39 45	Long bend. Poled up.
	Rapid	..	..	3·00	0 2	335·19	39 47	Poled up. 100 wide.
	Current	..	..	·50	1 18	335·69	40 65	100 wide.
	Rapid	..	..	3·00	0 3	338·68	40 68	1 chain wide. Poled up.
	To foot of Semi-discharge	..	..	..	0 16	338·69	41 04	Still water.
	Semi-discharge	..	3	3·50	0 1	342·19	41 05	Short Portage. Canoes poled up.
	To foot of Little Dog Falls	..	..	..	0 19	342·19	41 24	Still reach. Paddled. End of poling.
	Little Dog Portage	7	..	14·94	0 4	357·13	41 28	Rocky bluffs. River 2 chains wide.
	Current	..	..	·25	0 5	357·38	41 33	River 2 chains wide.
	Rapid	..	..	3·00	0 5	360·38	41 38	Paddled up.
	Current	..	..	·50	1 30	360·88	42 68	High shores. 300 wide.
	Little Dog Lake	..	..	..	1 58	360·88	44 46	1½ miles wide. High shores. Rocky.
	Great Dog Portage	8	..	347·81	1 54	708·69	46 20	Over high mountain. Summit of portage 591 over Little Dog. Steepest portage on route.
Section II.	Great Dog Lake	..	..	..	8 00	708·69	54 20	To mouth of Dog River.
	Dog River Current	..	..	6·18	25 21	714·87	79 41	To foot of 1st Rapid. Current 3″ per mile.
	1st Rapid	..	..	1·00	0 4	715·87	79 45	River 1 chain wide, 2 ft. deep, rocky bottom.
	Current	..	..	·25	0 20	716.12	79 65	1½ wide.
	Rapid, Semi-discharge	..	4	3·80	0 1	719·92	79 66	High hills. River 2 chains wide.
	Current	..	..	·50	1 45	720·42	81 31	
	Portage du Jordain	9	..	8·60	0 7	729·02	81 38	Rocky Chute.
	Current to Portage de l'Eau Froide	..	..	·25	3 14	729·27	84 52	Through narrow creek and small Lakes. Marshy.
	Portage de l'Eau Froide	10	..	·76	0 5	730·03	84 57	Into Lac de l'Eau Froide.
	Lac de l'Eau Froide	..	..	..	0 5	730·03	84 62	Lake 3′ deep, clean water, temperature 40°.
	Prairie Portage	11	..	157·12	2 50	887·15	87 32	Height of Land. Sandy level.
	Small Lake	..	..	..	0 20	887·15	87 52	Highest water.
Section III.	*Portage de Milieu*	12	..	16·39	0 39	870·76	88 11	Descending.
	Lac de Milieu	..	..	..	1 00	870·76	89 11	Marshy.
	Savanne Creek	..	..	..	0 6	870·76	89 17	Leading to Savanne Portage. Outlet of Lake.
	Great Savanne Portage	13	..	31·67	1 41	839·09	90 58	Tamarac swamp.
	Savanne River	..	..	7·00	20 00	832·09	110 58	To Lake of Thousand Islands. River 1 chain wide.
	Lake of a Thousand Islands	..	..	..	24 58	832·09	135 36	Clear navigation. Deep.
	Portage Baril	14	..	+1·86	0 17	833·95	135 53	Into Lac de Baril, which is above 1000. Lake 1′86.
	Baril Lake	..	..	..	7 43	833·95	143 16	Half-mile wide. Rocky shore and Island.
	Brulé Portage	15	..	47·02	0 21	786·93	143 37	A creek connects these lakes.
	Creek	..	..	..	0 6	786·93	143 43	Sluggish creek.
	Cannibal Head Lake	..	..	..	7 69	786·93	151 32	Half-mile wide, with narrows 1 chain.
	Rapid, Semi-discharge	..	5	2·50	0 3	784·43	151 35	Very narrow and rocky.
	Small Lake	..	..	..	2 69	784·43	154 24	From 1½ to 3 chains wide, with narrows 50.
	Creek	..	..	1·00	0 3	783·43	154 27	10 wide. Shoal.
	Creek Current	..	..	·50	0 10	782·93	154 37	20′ to 50′ wide. 1 foot water in places.
	Rapid	..	..	2·00	0 11	780·93	154 48	Shoal, with boulders.
	Pond	..	..	..	0 7	780·93	154 55	5 chains wide.
	Creek to French Portage	..	..	3·50	0 60	777·43	155 35	2 chains wide. Shoal.
	Great French Portage	16	..	99·71	1 60	677·72	157 15	Rough and rocky, with swamps.
	Lake Francis	..	..	..	1 17	677·72	158 32	20 chains wide.
	River	..	..	·25	1 42	677·47	159 74	Winding. 100 wide. Deep water.
	Pickerel Fishery Lake	..	..	..	8 35	677·47	168 29	60 chains wide, with narrows 100.
	Portages des Morts	17	..	6·90	0 26	670·57	168 55	
	Lac Doré Dalles	..	..	..	1 33	670·57	170 08	20 chains wide.
	Portage des Deux Rivières	18	..	117·22	0 26	553·35	170 34	
	Small Lake and Creek	..	..	..	1 32	553·35	171 66	Leading to Sturgeon Lake.
	Upper Sturgeon Lake	..	..	..	6 64	553·35	178 50	28 chains wide.
	Creek	..	..	·50	1 00	552·85	179 50	Marshy. 1 chain wide.
	Lower Sturgeon Lake	..	..	..	6 40	552·85	186 10	1 mile wide. Narrows 10 chains wide.
	1st Sturgeon Rapids	..	6	4·51	0 11	548·34	186 21	Semi-discharge.
	Small Lake	..	..	..	0 15	548·34	186 36	20 chains wide.
	2nd Sturgeon Rapid Portage	19	..	6·21	0 3	542·13	186 39	Fall 3 chains wide.
	Rapid	..	..	5·00	1 40	537·13	187 79	Run by canoes.
	Current	..	..	1·00	0 20	536·13	188 19	3 chains wide.
	Rapid	..	..	4·00	0 6	532·13	188 25	Run by canoes.
	Current	..	..	0·80	0 35	531·33	188 60	5 chains wide.
	Rapid	..	..	0·50	0 3	530·83	188 63	Run by canoes. Shoal.

TABLE showing the Heights and Distances of the different Breaks which occur in the Hudson's Bay Canoe Route, between Fort William, Lake Superior, and Fort Garry, Red River, &c.—*continued.*

	NAME.	Number of Portage.	Number of Discharges.	Height.	Length.	Reduced Level.	Distance from Lake Superior.	REMARKS.
				′ ″	Ms. chs.	′ ″	Ms. chs.	
	Current			1·50	2 65	529·33	191 48	
	Rapid			1·50	0 2	527·83	191 50	Run by canoes. Shoal.
	Small Lake				2 30	527·83	194 00	15 chains wide.
	Tanner's Rapid, Mininis Fall		7	6·00	0 5	521·83	194 05	Semi-discharge. Generally portaged.
	Current to Small Rapid			3·00	2 33	518·83	196 38	River 3 to 5 chains wide.
	Small Rapid			·75	0 2	518·08	196 40	River 5 chains wide.
	Current			1·50	2 16	516·58	198 56	River 5 chains wide.
	Island Portage	20		10·06	0 2	506·52	198 58	Portage made on rock.
	River to Pine Lake			1·50	2 65	505·02	201 43	5 chains wide, with narrows off—chains.
	Pine Lake				6 32	505·02	207 75	Lake 2 miles wide, stretching far to South.
	Macan River—Current to Rapid			1·00	1 16	504·52	209 11	River 5 chains wide.
	Small Rapid			2·00	0 16	502·52	209 27	River 4 chains wide—run this rapid.
	Snake Portage	21		12·14	0 5	490·38	209 32	Rocky Chute. Dangerous approach to portage.
	River to Crow Portage			1·50	3 01	488·88	212 33	River 4 chains wide.
	Crow Portage	22		9·88	0 9	479·00	212 42	River 3 chains. Very rocky. River in two channels.
	Current			1·25	3 60	477·75	216 22	River from 6 to 20 chains wide, with islands.
	Small Rapids			1·	0 1	476·75	216 23	River 6 chains wide.
	Current			1·50	3 50	476·25	219 73	8 chains wide.
	Rapid			2·00	0 3	473·25	219 76	8 chains wide.
	Current to head of Grand Falls			·75	1 16	472·50	221 62	River from 4 to 20 chains wide.
	Grand Falls Macan River	23		16·08	0 6	456·42	221 68	River 6 chains wide. Rocky island. Approach dangerous.
	Current			·75	1 44	455·67	223 32	River 20 chains wide. Islands.
	Long Rapids			10·00	1 00	445·67	224 32	Run in descending, but dangerous. Portage ascending.
	Current			0·50	1 52	445·17	226 04	River 4 chains wide.
	Nameaukan Rapid			7·00	0 15	438·17	226 19	Run descending. Portage ascending. Very rough.
	Current to Nameaukan Lake			·50	1 54	437·67	227 73	River 5 chains wide.
	Nameaukan Lake				6 63	437·67	234 56	Lake half-mile wide, with islands 5 miles at end.
	Portage No. 1	24		8·55	0 6	429·12	234 62	Into pond.
	Pond or Creek				0 20	429·12	235 02	1½ chains wide. Marshy.
	Portage No. 2	25		·21	0 11	428·91	335 13	To level of Rainy Lake.
Section IV.	Rainy Lake				34 59	428·91	269 34	To entrance of Rainy River.
	Small Rapid, Rainy River			2·00	0 4	428·91	269 76	Run by canoes.
	Current to Chaudière Falls			1·00	1 79	425·91	271 75	8 chains wide.
	Chaudière Falls, Fort Francis	26		22·88	0 8	403·03	272 03	Portage on north side of fall.
	Rainy River Current			11·00	31 40	392·03	303 43	River about 15 chains. Clay banks.
	1st Rapid Manitou			2·50	0 3	389·53	303 46	Rapid run. River narrows to 4 chains.
	Current			3·50	7 40	386·03	311 06	River wide and navigable.
	2nd or Long Rapid			3·00	0 5	383·03	311 11	Run by canoes. Narrows.
	Current			9·00	30 20	374·03	341 31	To Dead Water River. Narrows.
	From end of Current to Lake of the woods.				5 00	374·03	346 31	Dead Water.
Section V.	Lake of the Woods				64 17	371·03	410 48	To Rat Portage.
	Rat Portage	27		15·98	0 13	358·05	410 61	Hudson's Bay Company port channels through many islands.
	Winnipeg River: current			2·00	9 28	356·05	420 9	Lake narrows and islands—rocky shores.
	1st Rapid des Dalles			3·00	0 10	353·05	420 19	River 2½ chains wide, run by canoes.
	Current			·75	5 02	352·30	425 21	Through islands, occasional narrows.
	„			·25	1 00	352·05	426 21	
	To Semi-discharge Rapid			1·00	12 59	351·05	439 0	
	Semi-discharge		8	5·50	0 03	345·55	439 3	One chain wide, high rocky bank, generally portaged.
	Current			·25	1 00	345·30	440 3	Narrow channel, 4 chains wide.
	Current			·50	0 54	344·80	440 57	High rocky cliffs, river 5 chains wide.
	Rapid			3·00	0 03	341·80	440 60	River 5 chains wide.
	Current to head of Yellow Mud			·25	0 24	341·55	441 4	„ „
	Yellow Mud Falls	28		22·02	0 5	319·53	441 9	Heavy falls, portage steep, bad approach.
	To small pitch at foot				0 5	319·53	441 14	
	Demi-discharge		9	7·00	0 4	312·53	441 18	Very heavy pitch—run occasionally at high water.
	Current to Pine Portage			·25	0 54	312·28	441 72	River 6 chains wide, high banks.
	Pine Portage	29		8·24	0 10	304·04	442 2	River narrows to 3 chains.
	Current to Cave Rapid				0 05	304·04	442 7	
	Cave Rapid			4·00	0 03	300·04	442 10	Run—river narrows 1½ chains.
	River to Small Rapid				0 27	300·04	442 37	
	Rapid			2·00	0 1	298·04	442 38	River 1 chain wide.
	River to De l'Isle Portage			4·71	17 00	293·33	459 38	Varying in width from 8 to 40 chains rocky.
	De l'Isle Portage	30		3·40	3 00	289·93	459 41	Sometimes run, but dangerous in three channels.
	River (Lake Têtu)				3 24	289·93	462 65	Sixty chains wide, with many islands.
	Current			·75	0 08	289·18	462 73	Seven chains wide.
	„			3·00	11 12	286·16	474 5	From 3 to 8 chains wide—islands.
	„			·75	0 59	285·43	474 64	From 3 to 8 chains wide.

TABLE showing the Heights and Distances of the different Breaks which occur in the Hudson Bay Canoe Route, between Fort William, Lake Superior, and Fort Garry, Red River, &c.—*continued.*

	NAME.	Number of Portage.	Number of Discharges.	Height.	Length.	Reduced Level.	Distance from Lake Superior.	REMARKS.
				′ ″	Ms. chs.	′ ″	Ms. chs.	
	Current to head of rapid	..	..	3·00	5 32	282·43	480 16	Rapid current.
	Rapid	..	..	1·50	0 40	280·93	480 56	Rapid.
	To head of Jocko	..	..	·25	0 16	280·68	480 72	
	Chute à Jocko	31	..	13·00	0 05	267·68	480 77	Eight chains wide—rocky portages on rock
	Small Rapid	..	..	1·00	0 02	266·68	480 79	Run—heavy water.
	Current	..	..	·50	0 70	266·18	481 69	
	To head of 1st Point des Bois	..	..	3·00	6 60	263·18	488 49	River 20 chains wide—numerous islands
	1st Point des Bois Falls	32	..	10·50	0 13	252·68	488 62	River 15 chains.
	River to head of 2nd Chute	..	..	..	0 05	252·68	488 67	„ „
	2nd Point des Bois Falls	33	..	19·92	0 05	232·76	488 72	River 20 chains wide, rocky in the channels.
	Current to 3rd Chute	..	..	1·50	1 16	231·26	490 8	River 15 chains wide.
	3rd Point des Bois Falls	34	..	7·80	0 03	223·46	490 11	River 20 chains wide in three channels.
	Current	..	..	1·00	0 72	222·46	491 3	
	Current to Slave Falls	..	..	·25	2 74	222·21	493 77	River about 20 chains wide.
	Slave Falls	35	..	19·80	0 30	202·41	494 27	Perpendicular fall—dangerous portage.
	Current	..	..	1·00	5 44	201·41	499 71	River 15 chains wide.
	Rapid	..	..	1·50	0 18	199·91	500 9	Run, at the head of Barrière Chute.
	Barrière Chute	36	..	4·97	0 03	194·94	500 12	Very heavy whirlpool below the fall.
	Small Rapids	..	..	1·00	0 24	193·94	500 36	
	River	..	..	·25	1 22	193·69	501 58	Twenty chains wide.
	Current	..	..	·50	0 24	193·19	502 2	„ „
	To Otter Falls; current ..	..	..	1·00	4 75	192·19	506 77	„ „
	Otter Falls	..	..	3·00	0 10	189·19	507 7	Run—this rapid very bad and dangerous
	Current	..	..	1·50	2 42	189·69	509 49	
	„	..	..	·75	2 34	186·94	512 3	
	Rapid	..	..	2·00	0 06	184·94	515 9	River 4 chains wide.
	To head of Seven Portages	..	..	·33	1 68	184·61	513 77	Banks low, 10 chains wide.
	1st of Seven Portages	37	..	10·23	0 06	174·38	514 3	These portages are all on short rocky points, the approaches to the portages are exceedingly dangerous.
	Current to 2nd Chute ..	..	..	13	0 05	174·25	514 8	
	2nd Chute	38	..	8·47	0 05	165·78	514 13	
	Current to 3rd Chute ..	..	..	·16	0 10	165·62	514 23	
	3rd Chute	39	..	5·60	0 08	160 02	514 31	
	Current to 4th Chute ..	..	..	·25	0 40	159·77	514 71	
	4th Chute	40	..	7·68	0 03	152·09	514 74	
	Current to 5th Chute ..	..	..	·75	0 48	151·34	515 42	
	5th Chute	41	..	2·90	0 4	148.44	515 46	Sometimes run—very dangerous.
	Current to 6th Chute ..	..	..	·30	0 5	148·14	515 51	
	6th Chute	42	..	8·13	0 5	140·01	515 56	
	Current to 7th Chute ..	..	..	1·50	0 60	138·51	516 36	
	7th Chute	..	..	4·75	0 6	133·76	516 42	Run, but dangerous—portage ascending
	Current to Lac de Bonnet ..	..	..	3·50	10 44	130·26	527 16	Land improves, clay soil—poplar and birch
	Lac de Bonnet	..	..	..	6 9	130·26	533 25	
	Narrows at outlet	..	..	1·00	0 7	129·26	533 32	Three chains wide—rocky.
	1st Gala de Bonnet	43	..	1·00	0 1	121·95	533 33	Short rocky fall.
	Current to 2nd Gala	..	..	·16	0 74	121·79	534 27	
	2nd Gala de Bonnet	44	..	5·00	0 4	116·79	535 31	
	To head of Big Bonnet Chute	..	..	2·00	3 51	114·79	532 2	River 8 to 10 chains wide.
	Big Bonnet Falls	45	..	34·23	0 51	80·56	538 53	Fine level portage,
	Current	..	..	1·00	0 72	79·56	539 45	Ten chains wide—strong current.
	Portage Rocher de Bonnet	46	..	8·25	0 6	71·31	539 51	
	Current to head of White Mud ..	..	..	1·00	2 2	70·31	542 33	Thirty chains wide.
	White Mud Falls Portage	47	..	13·05	0 15	57·26	542 48	„ „
	Current to Silver Falls ..	..	..	·75	2 68	56·51	545 36	
	1st Silver Falls Portage	48	..	6·06	0 7	50·45	545 43	Sometimes made by one portage.
	To 2nd Portage	..	..	..	0 5	50·45	545 48	
	2nd Silver Falls Portage	49	..	15·56	0 13	39·89	545 61	
	Current	..	..	1·50	3 18	33·39	548 79	River 15 chains wide.
	Rapid	..	..	2·00	0 6	31·39	549 5	River 10 „
	Current	..	..	·75	0 68	30·64	549 73	
	Rapid	..	..	3·00	0 7	27·64	550 0	River 9 „
	Current to Pine Portage	..	..	·25	0 68	27·39	550 68	
	Pine Portage and Falls	50	..	8·35	0 12	19·04	551 0	Fifteen chains wide—last portage.
	Current	..	..	·50	1 34	18·54	552 34	
	Small Rapid "Manitou"	..	..	1.00	0 2	17·54	552 56	Eight chains wide.
	Current to dead water	..	..	·75	4 28	16·79	556 64	Fort Alexander, Hudson Bay Company post.
Section VI.	Lake Winnipeg	..	..	..	2 0	16·79	558 64	Mouth of the River Winipeg.
	„	..	..	..	44 98	16·79	604 2	Mouth of the Red River.
	Red River	..	..	..	6 25	16·79	610 27	Through marsh.
	Indian Settlement	..	..	·25	8 71	17·04	619 18	Current.
Section VII.	Stone Fort	..	..	1·75	7 64	18·79	627 2	
	Current	..	..	·25	1 44	19·04	628 46	
	„	..	..	3 0	2 33	22·04	630 79	
	Rapids	..	..	2 0	0 2	24·04	631 1	Grand Rapids, 2 feet water.
	Current	..	..	9 50	8 38	32·54	639 39	
	Fort Garry	..	..	2 0	7 51	34·54	647 10	Mouth of Assiniboine.

Fort Garry, Red River Settlement,
10th December, 1857.

(Signed) W. H. E. NAPIER.

THE KAMINISTIQUIA ROUTE.

TABLE II.

LEVELS of the Kaministiquia and Winipeg Rivers, by the Canoe Route, from Lake Superior to Lake Winipeg.

No.		Distance. Miles.	Distance. Chains.	Rise in feet.	Height above Lake Superior.
1	Estimated rise from Lake Superior to lower end of Kakabeka or Grand Falls Portage:—				
	From Lake Superior to the first rapid on the Kaministiquia River, the rise is supposed to be 4 inches per mile, and the distance about 12 miles—				
	Dist. 12 — Rise in ft. 4·00				
	1st Rapid, estimated to be — $\frac{1}{8}$ — 2·50				
	Left Current, for two miles — 2 — 1·50				
	2nd Rapid — $\frac{1}{2}$ — 3·00				
	3rd „ — $\frac{1}{4}$ — 1·50				
	4th „ — $\frac{1}{2}$ — 3·50				
	5th „ — $\frac{1}{2}$ — 3·00				
	6th „ — $\frac{1}{4}$ — 3·00				
	7th „ — $\frac{1}{2}$ — 3·60				
	8th „ — $\frac{1}{2}$ — 5·00				
	9th Swift current — $1\frac{1}{4}$ — 2·00				
	10th Paresseux Rapid, measured — $\frac{1}{2}$ — 5·10				
	11th Rapid — $\frac{1}{4}$ — 2·00				
	12th „ — $\frac{1}{2}$ — 2·50				
	Three miles from this to the next rapid, the current being considerable, say 6 inches per mile — 3 — 1·50				
	13th Rapid — $\frac{3}{4}$ — 6·00				
	14th „ — $\frac{1}{2}$ — 3·50	22	45·99	53·20	53·20
2	Kakabeka Falls, including the rapids above and below, from the lower to the upper end of portage, measured	..	62·00	112·05	172·25
3	Portage Ecarte, from the Lower to the upper end, measured	..	37·61	62·65	234·90
4	1¼ mile quiet water, 4 inches per mile	1	40·00	0·50	235·40
5	Nicolet Portage, the canoes were towed up the rapid which passes this portage; rise, including current above and below, estimated to be	..	10·00	6·50	241·90
6	Rapid, which the canoes are poled up, estimated to be	..	10·00	4·00	245·90
7	½ mile moderate current to Island Portage, including a small ripple	..	40·00	1·00	246·90
8	Island Portage, measured	..	3·00	12·62	259·52
9	Short Portage, immediately above the Island Portage, measured	..	3·00	6·90	266·42
10	Mokaman Falls, measured	..	4·00	19·25	285·67
11	Above the Mokaman Falls, four rapids occur in the space of a mile and a half, ascent in which was estimated as follows:—				
	1st Rapid, which the canoes are towed up — 3·00				
	2nd „ „ „ poled up — 2·00				
	3rd „ „ „ towed up — 3·00				
	4th „ „ „ poled up — 4·00	1	40·00	12·00	297·67
12	Half a mile of current, including a small ripple	..	40·00	1·00	298·67
13	3 miles moderate current, supposed to be 4 inches per mile	3	..	1·00	299·67
14	Half Portage, ascent estimated to be about 5 feet in a distance of 10 chains	..	10·00	5·00	304·67
15	A mile of quiet water, say — 0·50				
	Rapid, which canoes are poled up — 8 ch. — 4·00	1	8·00	4·50	309·17
16	Three miles of quiet water, supposed to be — 1·00				
	Rapid below old Matawan Fort — 3·00	3	..	4·00	313·17
17	Two little rapids occur within a mile above the Matawan, rise, including current, between them — 6·00				
	Two and a half miles moderate current to next rapid, say 4 inches per mile — 00·83	3	40·00	6·83	320·00
18	Rapid Fall, estimated	..	5·00	4·00	324·00
19	Two miles of considerable current, say 6 inches per mile	2	..	1·00	325·00
20	Rapid, which canoes are poled up, estimated to be — 4·00				
	One and a half miles considerable current to next rapid — 00·75	1	40·00	4·75	329·75
21	Two rapids occur within half a mile below the Little Dog Portage, the rise in which is about—				
	1st rapid — 3·00				
	2nd ditto, half portage — 4·00				
	Intermediate current — 1·00	..	40·00	8·00	337·75
22	Little Dog Portage, from foot to head, measured	..	8·00	19·94	352·69
23	Rapid immediately above Little Dog Portage, estimated	..	3·00	2·50	355·19
24	Three miles smooth water to the Great Dog Portage, supposed to be about four inches per mile	3	..	1·00	356·19

Levels of the Kaministiquia and Winipeg Rivers, &c.—*continued.*

No.		Distance. Miles.	Distance. Chains.	Rise in feet.	Height above Lake Superior.
25	Great Dog Portage, from water level at the lower end of Dog Lake, measured	1	73·00	347·31	704·00
26	For the succeeding eight miles across Dog Lake, there is no perceptible current, and from thence for 21 miles upwards, the river of the same name winds through a marsh, with a very little current. The total rise to Cold Water Lake I estimate as follows 21 miles.				
	Through marsh two inches per mile .. .. 3·50				
	Swift run at head of marsh .. .. 1·00				
	1st rapid ¼ mile above swift run three chains in length, measured 3·80				
	Two miles and a half smooth water, two inches per mile .. 00·41				
	2nd rapid, Jourdain, measured .. .. .. 5¼ chs. 8·60				
	Three miles dead water from thence to Cold Water Lake, 3 inches per mile .. .. 00·75				
		34	63·00	18·06	722·06
27	Prairie Portage from Cold Water Lake, the source of this branch of Dog River, to a small pond discharging itself into the Savanne River, being the summit water level by this route, between the water of the Kaministiquia and the Winipeg, measured	2	50·00	157·12	879·18
				Fall in feet.	Total fall from Prairie Portage.
28	Middle Portage measured	..	38·50	16·39	16·63
29	Savanne Portage, from the small lake at the west end of Middle Portage to the Savanne River, measured	1	41·00	31·69	48·08
30	From the Savanne Portage to Lake of a Thousand Lakes, the descent for distance of twenty-four miles, the current being moderate throughout, is supposed to be about four inches per mile	24	..	8·00	56·08
31	In the Lake of a Thousand Lakes the current is supposed to be about one inch per mile for twenty miles	20	..	1·66	57·74
32	Baril Portage, from the Lake of a Thousand Lakes to Baril Lake, ascent measured 1·86, distance 16·85 chains.	..	16·85	1·86	55·88
	In Baril Lake, the discharge being very small in proportion to its size, there is supposed to be no appreciable current; the length of the lake is about ..	8	40·00	..	..
33	Portage Brulé, from Baril Lake to Windegoostegoon Lake measured	..	21·00	47·02	102·90
34	From the Brulé to Portage Français, a distance of ten miles, a succession of small lakes occur, with a moderate current between them, and at one place a little rapid, fall supposed to be six feet in ten miles	10	..	6·00	108·90
35	French Portage, from the brook at the east end to the lake at the west, measured..	1	60·00	99·71	208·61
36	Lac Demarais or Pine Portage	..	26·00	6·90	..
	Thence across small pond to Deux Rivières Portage there is no appreciable current				
37	Deux Rivières Portage, measured	..	32·00	117·22	332·73
38	From Deux Rivières Portage to the first rapid below Sturgeon Lake, a distance of about sixteen miles, there being a little current occasionally in the narrowest parts, allow say one inch per mile	16	..	1·33	334·06
39	Rapid Décharge, half portage, measured	..	11·00	4·51	338·57
40	Second rapid below Sturgeon Lake measured .. .. 3·15 6·21				
	Intermediate current between it and the first rapid .. 5·00 0·50				
		..	8·15	6·71	345·28
41	Two rapids, which the canoes run, occur below the above—				
	First rapid estimated .. .. 2·50				
	Second „ .. .. 4·00				
	Intermediate swift current .. .. 1·50				
		2	..	8·00	353·28
42	Three miles and a half to Tanner's Rapid or Reef Portage, including a swift run, say	3	40·00	1·75	355·03
43	Tanner's Rapid, estimated	..	4·00	6·00	361·03
44	From Tanner's Rapid to Island Portage, the current being considerable, say six inches per mile	3	60·00	1·87	362·90
45	Island Portage, measured	..	0·13	10·06	372·96
46	Two miles and a half to Pine Lake, the current being considerable, say six inches per mile	2	40·00	1·25	374·21
47	Pine Lake, seven miles and a half in length, allowing two inches per mile ..	7	40·00	1·25	375·46
48	From Pine Lake to Snake Falls, the river being very rapid for a distance of two miles, fall estimated to be seven feet	2	..	7·00	382·46
49	Snake Falls measured	..	5·00	12·14	394·60
50	Three miles from Snake Falls to the second rapid below Pine Lake, a strong current prevailing, say nine inches per mile	3	..	2·25	396·85
51	Second portage below Pine Lake measured	..	8·00	9·88	406·73
52	In the next navigable space, between the second portage below Pine Lake and the high falls, two small rapids occur, which, with the intermediate current, were estimated as follows :—				
	First rapid .. .. 2·00				
	Second „ .. .. 2·50				
	Six miles intermediate current, six inches per mile .. 3·00				
		6	..	7·50	414·23
53	High Falls measured	..	5·80	16·08	430·31
54	The succeeding space of five miles, in which two chains of heavy rapid occur, was estimated as follows :—				
	One chain of rapids three-quarter mile in length .. .. 8·00				
	Two chains of rapids, one mile in length.. .. .. .. 9·00				
	Three miles and a quarter intermediate strong current, nine inches per mile .. .. 2·43				
		5	..	19·43	449·74
55	Six miles and a quarter through Lac la Croix, supposed to be one inch per mile	6	40·00	00·54	450·28

Levels of the Kaministiquia and Winipeg Rivers, &c.—*continued.*

No.		Distance. Miles.	Distance. Chains.	Rise in feet.	Height above Lake Superior.
56	Baré Portage, from Lac la Croix to a pond discharging itself into Rainy Lake, measured	..	0·54	8·55	458·83
	From pond to Rainy Lake no fall, but a portage of eleven chains in length	..	11·00	..	..
57	Rainy Lake, forty miles from the lower end to the upper end, reckoning from Baré Portage, the current not being perceptible except in the narrow parts, say one inch per mile	40	..	3·33	462·16
58	From Rainy Lake to Rainy Falls, two small rapids occur.				
	Fall in first rapid at foot of lake, say 2·50				
	Fall in second rapid 3·00				
	Two miles moderate current 00·50				
		2	..	6·00	468·16
59	Rainy Falls at Fort Francis, measured	..	7·77	22·88	491·04
60	In Rainy River, between Fort Francis and the Lake of Woods, two small rapids occur :—				
	The first, the Manitou, having a fall of about 2·50				
	And the Long Rapid 3·50				
	The intermediate current is considerable, but the volume of water being great, it would be produced by a fall of four inches per mile, which, for sixty-four miles would give 21·33				
		64	..	26·33	517·37
61	In the Lake of the Woods, sixty-four miles in length, the fall may be about one inch per mile	64	..	5·33	522·70
62	Rat Portage, measured	..	12·95	16·00	538·70
	Eight miles and a half to Les Dalles, four inches per mile	8	40·00	2·83	541·53
63	Les Dalles, estimated	..	40·00	4·00	545·53
64	Twenty-four miles quiet water, supposed to average about two inches per mile	24	..	4·00	549·53
65	Grande Décharge, estimated	..	30·00	6·00	555·53
66	Two miles and a half from Grande Décharge to Yellow Mud, including a small rapid, estimated 4·25				
		2	40·00	4·25	559·78
67	Yellow Mud Falls, measured	..	5·20	22·02	581·80
	Rapids below Yellow Mud Falls, estimated 7·00				
	Two miles and a quarter to Pine Portage, six inches per mile 1·25				
		2	40·00	8·25	590·05
68	Pine Portage measured	..	10·50	8·24	590·29
69	Rapids below Pine Portage—Cave Rapids 4·00				
	From Pine Portage to Portage de l'Isle, twenty-one miles, estimated to be three inches per mile 5·25				
		21	..	9·25	607·54
70	Portage de l'Isle, estimated	..	20·00	3·40	610·94
71	From Portage de l'Isle to Chute à Jacquot, twenty-five miles quiet water, supposed to be about two inches per mile 4·16				
	A small rapid 1·00				
		25	..	5·16	616·10
72	Chute à Jacquot, measured	..	3·00	12·97	629·07
73	Rapid immediately below Chute à Jacquot 1·00				
	Seven miles dead water, say two inches per mile 1·16				
		7	..	2·16	631·23
74	First Pointe des Bois 12·72 10·50				
	Second " 4·90 19·92				
	Rapid 1·50				
	Third Pointe des Bois 2·80 7·80				
	Intermediate between the points 1·20 2·50				
		1	40·42	42·22	673·45
75	Four miles from third Pointe des Bois to Slave Falls, quiet water, say three inches per mile	4	..	1·00	674·45
76	Slave Falls measured	..	30·40	19·80	694·25
77	Six miles from Slave Falls to La Barrière, estimated to be four inches per mile 2·0				
	La Barrière, measured 4·97				
	Small Rapid below La Barrière 1·00				
		6	..	7·97	702·22
78	Six miles from La Barrière to Otter Falls, supposed to be about four inches per mile 2·00				
	Otter Falls, estimated 3·00				
		6	..	5·00	707·22
79	In the succeeding eight miles, from Otter Falls to the Seven Portages, three rapids occur, supposed to have a fall in a distance of two miles of 6·50				
	Six miles intermediate strong current, supposed to be nine inches per mile 4·50				
		8	..	11·00	718·22
80	Seven Portages :—				
	First portage, measured 4·20 10·23				
	Second " " 3·00 8·47				
	Intermediate rapid, estimated 2·00				
	Third portage, measured 5·20 5·60				
	Fourth " " 7·68				
	Fifth and sixth portage, measured 11·03				
	Seventh portage, measured 4·75				
	Distance past the four last portages 60·00				
	Two miles rapid between portages estimated to have a fall of 4·00				
		2	72·40	53·76	771·98
81	From the last of the seven portages to Galais du Bonnet, the distance is estimated at eighteen miles, for the first eight miles current supposed to be about six inches per mile 4·00				
	Ten miles smooth water in Bonnet Lake, say two inches per mile 1·66				
		18	..	5·66	777·64

Levels of the Kaministiquia and Winipeg Rivers, &c.—*continued.*

No.		Distance.		Rise in feet.	Height above Lake Superior,
		Miles.	Chains.		
82	Galais du Bonnet—				
	1st Galais, measured .. .. 7·30 7·31				
	2nd „ „ .. .. 4·00 5·00				
	Between Falls, estimated .. .. 40·00 1·00				
		..	51·30	13·31	790·95
83	Four miles considerable current to Grand Bonnet, six inches per mile	4	..	2·00	792·95
84	Grand Bonnet, measured	..	50·00	34·23	827·18
85	Thirty chains from Grand to Petit Bonnet, fall supposed to be .. 1·00				
	Petit Bonnet, measured .. .. 13·00 8·25				
		..	43·00	9·25	836·43
86	Four miles from Petit Bonnet to White Mud Portage, strong current, say nine inches per mile	4	..	3·00	839·43
87	White Mud Portage, measured	..	15·50	13·05	852·48
88	Three miles and a half from White Mud Portage to 1st Silver Falls, a considerable current prevailing, say six inches per mile..	3	40·00	1·75	854·23
89	Silver Falls—				
	First Fall, measured .. .. } 40 chains { 6·06				
	Second „ „ .. .. } { 15·56				
	Two pitches below falls, estimated .. .. 4·00				
		..	40·00	25·62	879·85
90	Five miles from Silver Falls to Pine Portage, the current being moderate, say four inches per mile	5	..	1·66	881·51
91	Pine Portage, measured	..	12·00	8·35	889·86
92	Eight miles from Pine Portage to Fort Alexander on the level of Lake Winipeg, the current being gentle, allow, say three inches per mile ..	8	..	2·00	891·86

KAMINISTIQUIA ROUTE.

TABLE III.

TABLE showing the Lengths, Distances from Lake Superior, Heights, Elevation above Lake Superior, and the Number of Portages on the Route. Professor Hind's Report.

Names.	Lengths.		Distances from Lake Superior.		Heights.	Elevation above Lake Superior.	No. of Portages.	Remarks.
Kaministiquia River.	Mls.	Chs.	Mls.	Chs.	Feet.	Feet.		
Mouth..	..	..	..	..	..	..	..	
Fort William	0	40	0	40	..	..	..	
Pointe des Meurons	9	40	10	0	4·49	4·49	..	
Rapids and Current	12	0	22	0	30·00	34·49	..	
Décharge de Paressoux	0	14	22	14	5·08	39·57	1	
Rapids and Current	7	4	29	18	16·63	56·20	..	
Mountain Portage	0	62	30	0	119·05	175·25	2	
River	0	20	30	20	..	175·25	..	
Rocky Portage	0	37	30	57	62·65	237·90	3	
River	2	60	33	27	0·50	238·40	..	
Nicolet Portage	10	6	33	43	6·50	244·90	4	
Rapids and Current	1	37	35	0	5·75	250·65	..	
Portage	0	3	35	3	12·62	263·27	5	
River	0	37	35	40	..	263·27	..	
Pot Holes Portage	0	13	35	53	6·90	270·17	6	
River	0	22	35	75	..	270·17	..	
Couteau Portage	0	5	36	0	19·25	289·42	7	
Trois Décharges	0	35	36	35	10·00	299·42	8	
River	1	0	37	35	0·20	299·62	..	
Poplar Décharge	0	5	37	40	3·00	302·62	9	
River	0	40	39	0	0·50	303·12	..	
Décharge	0	9	39	9	3·00	306·12	10	
Rapids and Current	9	51	48	60	35·00	341·12	..	
Portage des Maitres	0	1	48	61	3·00	344·12	11	
River	0	60	49	41	1·00	345·12	..	
Little Dog Portage	0	3	49	44	14·94	360·06	12	
Rapids and Current	2	60	52	24	3·00	363·06	..	
Little Dog Lake	1	20	53	44	..	363·06	..	
Great Dog Portage	1	52	55	16	347·81	710·87	3	
Great Dog Lake	10	60	65	76	..	710·87	..	
Dog River.								
Mouth..	..	..	65	76	..	710·87	..	
River	30	0	95	76	3·00	713·87	..	
Barrière Portage	0	1	95	77	3·50	717·37	14	

Table showing the Lengths, Distances from Lake Superior, Heights, Elevation above Lake Superior, and the Number of the Portages on the Route—*continued.*

Names.	Lengths.		Distances from Lake Superior.		Heights.	Elevation above Lake Superior.	No. of Portages.	Remarks.
	Mls.	Chs.	Mls.	Chs.	Feet.	Feet.		
Dog River—cont.								
River	2	20	98	17	0·20	717·57	..	
Jourdain Portage	0	6	98	23	8·60	726·17	15	
River	0	40	98	63	..	726·17	..	
Prairie River.								
Mouth			98	63	..	725·17	..	
River	3	0	101	63	6·50	727·67	..	
Cold Water Portage	0	6	101	69	0·76	728·43	16	
Cold Water Lake	0	14	102	3	..	728·43	..	
Prairie Portage	2	50	104	53	157·12	885·55	17	
Height of Land Lake	0	18	104	71	..	885·55	..	
Des Millier Portage	0	38	105	20	16·39	869·16	18	
Savanne Lake	1	40	106	69	..	869·16	..	
Great Savanne Portage	1	41	108	30	31·69	837·47	19	
Savanne River.								
Mouth			108	30	..	837·47	..	
River	13	20	121	50	4·79	832·68	..	
Thousand Lakes	21	60	143	30	..	832·68	..	
Baril Portage	0	17	143	47	1·86	834·54	20	
Baril Lake	8	0	151	47	..	834·54	..	
Bruló Portage	0	21	151	68	47·02	787·52	21	
Upper Bruló Lake	8	0	159	68	1·50	786·02	..	
Semi-Décharge	0	3	159	70	2·50	783·52	22	
Lower Bruló Lake	4	20	164	10	1·25	782·27	..	
Great French Portage	1	60	165	70	99·71	682·56	23	
French Portage Lake	1	40	167	30	..	682·56	..	
Pickerel River	2	40	169	70	1·25	681·31	..	
Pickerel Lake	13	0	182	70	..	681·31	..	
Pickerel Portage	0	26	183	16	6·90	674·41	24	
Doré Lake	1	60	184	76	..	674·41	..	
Deux Rivières Portage	0	32	185	28	117·22	557·19	25	
Sturgeon Lake	23	20	208	48	1·00	556·19	..	
Sturgeon River.								
Mouth			208	48	..	556·19	..	
Semi-Décharge, 1st Sturgeon Rapids	0	11	208	59	4·51	551·68	26	
River	0	20	208	79	0·25	551·43	..	
Portage, 2nd Sturgeon Rapids	0	3	209	2	6·21	545·22	27	
Rapids and Currents	7	8	216	10	10·00	535·22	..	
Semi-Décharge, Minnis Rapids	0	5	216	15	4·50	530·72	28	
Current	5	0	221	15	1·25	529·47	..	
Island Portage	0	3	221	18	10·06	519·41	29	
River	4	0	225	18	2·00	517·41	..	
Nequawquaw Lake	8	0	233	18	..	517·41	..	
Nameaukan River.								
Mouth			233	18	..	517·41	..	
Currents	2	0	235	18	5·00	512·41	..	
Rattlesnake Portage	0	5	235	23	12·14	500·27	30	
Current	3	27	238	50	1·75	498·52	..	
Crow Portage	0	8	238	58	9·88	488·64	31	
Rapids and Currents	0	40	245	18	7·00	481·64	..	
Grand Falls Portage	0	6	245	24	16·08	465·56	32	
Current	0	3	248	24	3·00	462·56	..	
Grand Rapids	0	40	248	64	16·00	446·56	..	
River	2	40	251	24	2·00	444·56	..	
Lake Nameaukan	6	40	257	64	..	444·56	..	
Nu Portage	0	6	257	70	8·55	436·01	33	
Lakelet	0	20	258	16	..	436·01	..	
Portage	0	11	258	27	0·21	435·80	34	
River	5	0	263	27	0·50	435·30	..	
Rainy Lake	38	0	301	27	..	435·30	..	
Rainy River.								
Mouth			301	27	..	435·30	..	
Rapids	0	40	301	67	3·00	432·30	..	
Currents	1	40	303	27	0·50	431·80	..	
Fort Francis Portage	0	8	303	35	22·88	408·92	35	
River	32	60	336	15	10·00	398·92	..	
Manitou Rapids	0	15	336	30	2·50	396·42	..	
River	6	40	342	70	3·50	392·92	..	
Long Rapids	0	20	343	10	3·00	389·92	..	
River	38	0	381	10	12·10	377·82	..	
Lake of the Woods	72	0	453	10	..	377·82	..	
Winipeg River.								
Rat Portage	0	13	453	23	15·98	361·84	36	
River	8	7	461	30	1·00	360·84	..	
Les Dalles Rapids	0	20	461	50	3·00	357·84	..	

Table showing the Lengths, Distances from Lake Superior, Heights, Elevation above Lake Superior, and the Number of the Portages on the Route—*continued.*

Names.	Lengths.		Distances from Lake Superior.		Heights.	Elevation above Lake Superior.	No. of Portages.	Remarks.
Winipeg River—cont.	Mls.	Chs.	Mls.	Chs.	Feet.	Feet.		
River	25	0	486	50	2·00	355·84	..	
Grand Décharge	0	20	486	70	6·00	349·84	37	
River	2	0	488	70	2·25	347·59	..	
Terre Jeune Portage	0	5	488	75	22·02	325·57	38	
River	0	55	489	50	0·75	324·82	..	
Charette Décharge	0	2	489	52	3·50	321·32	39	
River	0	78	490	50	1·00	320·32	..	
Terre Blanche Portage	0	10	490	60	8·24	312·08	40	
River	0	28	491	8	0·15	311·93	..	
Cave Rapids	0	2	491	10	2·50	309·43	..	
River	19	0	510	10	4·50	304·93	..	
De l'Isle Portage	0	2	510	12	3·40	301·53	41	
River	22	78	533	10	4·00	297·53	..	
Chute à Jacquet Portage	0	3	533	13	12·97	284·56	42	
River	9	57	542	70	1·60	282·96	..	
Point des Bois Portage	0	13	543	3	10·50	272·46	43	
River	0	7	543	10	0·25	272·21	..	
Point aux Chiens Portage	0	5	543	15	19·92	252·29	44	
River	0	75	544	10	1·00	251·29	..	
Roche Brulé Portage	0	3	544	13	7·80	243·49	45	
River	4	37	548	50	1·75	241·74	..	
Slave Falls Portage	0	30	549	0	19·80	221·94	46	
River	6	10	555	10	2·25	219·69	..	
Barrier Falls Portage	0	2	555	12	4·97	214·72	47	
River	4	78	560	10	2·00	212·72	..	
Otter Falls	0	1	560	11	3·00	209·72	..	
Current	5	79	566	10	8·00	201·72	..	
The Seven Portages: 1st	0	4	566	14	10·23	191·49	48	
Current	0	16	566	30	1·00	190·49	..	
2nd	0	3	566	33	8·47	182·02	49	
Current	0	37	566	70	2·00	180·02	..	
3rd	0	5	566	75	5·60	174·42	50	
Current	1	15	568	10	2·25	172·17	..	
4th	0	3	568	13	7·68	164·49	51	
Current	0	37	568	50	1·25	163·24	..	
5th	0	2	568	52	2·90	160·34	52	
Current	0	38	569	10	2·00	158·34	..	
6th	0	3	569	13	8·13	150·21	53	
Current	0	7	569	20	1·25	148·96	..	
7th	0	3	569	23	4·75	144·21	54	
River	11	37	580	60	3·00	144·21	..	
Bonnet Lake	4	40	585	20	..	144·21	..	
Anse de Bonnet Portage	0	1	585	21	7·31	133·90	55	
River	0	59	586	0	2·00	131·90	..	
Cap de Bonnet Portage	0	4	586	4	5·00	126·90	56	
River	3	16	589	20	3·25	123·65	..	
Big Bonnet Portage	0	50	589	70	34·23	89·42	57	
River	0	30	590	20	1·00	88·42	..	
Petit Roche Portage	0	13	590	33	8·25	80·17	58	
River	3	27	593	60	3·50	76·67	..	
White Mud Portage	0	15	593	75	13·05	63·62	59	
River	3	45	597	40	1·80	61·82	..	
Silver Falls Portage: 1st River	0	7	597	47	6·06	55·76	60	
2nd	0	3	597	50	0·25	55·51	..	
River	0	13	597	63	15·59	39·95	61	
Pine Portage	5	47	603	30	1·40	38·55	..	
River	0	12	603	42	8·03	30·20	62	
Fort Alexander	11	0	614	42	2·00	28·20	..	
Mouth of River	0	0	614	42	..	28·20	..	
Winipeg Lake	1	60	616	22	..	28·20	..	
Mouth of Red River	41	0	657	22	..	28·20	..	
Indian Mission	..		..		..	..	..	
Stone Fort	..		..		..	..	..	
Fort Garry	..		..		..	..	..	

NOTES BY COLONEL CROFTON ON THE KAMINISTIQUIA ROUTE.

Fort William.

Troops can be housed.

Defences.

Fresh provisions.

FORT WILLIAM is a very extensive post of the Hudson's Bay Company, and the troops could be housed, in part, while waiting to proceed upwards, should the barges all arrive before the first and second brigades of canoes have started from Fort William. The fort is approached from Thunder Bay, and is shut in on one side by hills, wooded half-way up, but bare at the top; the defences are mere palisades. Here fish of the finest kind and in profusion can be supplied to the troops, and afford a seasonable change after being 10 days on salt provisions.

All packages must here be examined and made secure from wet. They must be firmly fastened and prepared for very rough handling at the portages. Baggage to be secured.

By a short notice being given, provisions could be sent forward to Fort William and Lac la Pluie, and thus relieve the troops from carrying provisions for the whole journey. But the Hudson's Bay Company have at all times the means on this route of amply supplying the troops with pork, biscuit, tea, sugar, and spirits, if required. Magazines formed on the route.

All military stores of a heavy or bulky description must be sent to Fort Garry by Hudson's Bay, and thence taken to Red River by the fur traders in their boats, consigned to the Hudson's Bay Company. As part of this route from Canada can only be performed in canoes, neither guns, nor heavy nor bulky stores can be carried beyond Fort William. Heavy stores and guns cannot be conveyed by this route.

By this route, and in summer, I do not consider that tents are required except for the sick. Blankets, rugs, and oil cloths are quite sufficient; for, when the nights are wet, the barges are tilted up, and form excellent cover. The voyageurs and traders consider tents on this route only an incumbrance. Tents not absolutely necessary.

Having reached Fort Frances the troops will be transferred from canoes to boats, exactly the same as those used on the route from Fort York, Hudson's Bay. Troops transferred from canoes to boats

Should it be found requisite to halt here, the Hudson's Bay Company's Post could supply cover for the brigades in succession, but boats, and canoes if required, are here always available, and by previous notice being sent on the first opening of the waters in spring, everything could be in readiness, and an hour's detention need not take place. Troops could be housed.

At Rat Portage there is a post of the Hudson's Bay Company with every facility for landing and embarking the troops. Crossing the portage the troops embark on Winnipeg River, and as the stream is full and strong, little labour in working the boats will be experienced. Here, however, more than in any part of the route will caution be required to secure the lading of the boats from wet, as the portages are very numerous, and some of them difficult for carrying. The launching of the boats is in a few places dangerous, unless the directions of the guide and crew be attended to by the troops. The troops must be forced to sit still in the rapids, and on no account to sit on the sides of the boats. Indeed this should be a general rule. I enforced it rigidly on the route from Fort York, and found no rule more difficult to enforce or more necessary to enforce. Hudson's Bay Company's trading post. Winnipeg river. Cautions requisite to be given to troops

On reaching Fort Alexander there remains no difficulty to be overcome. From Fort Alexander to Fort Garry the boats need not be unloaded. Supplies are here abundant. Fort Alexander.

DESCRIPTION OF THE KAMINISTIQUIA ROUTE.

SECTION I.

THUNDER BAY TO GREAT DOG LAKE.

Thunder Bay.—Entrance to the Harbour.—The Welcome Island.—Channel of the River.—Banks of the River.—Mission of the Immaculate Conception.—M'Kay's Mountain.—Maple on M'Kay's Mountain.—The Village at the Mission.—Freezing and thawing of the River.—Indian Corn.—Vegetation.—Rapid.—The Grand Falls of Kakabeka.—Height of.—Alluvial Valley.—Vegetation of.—Area of Cultivable Land in.—Limit of Good Land.—Falls and Rapids.—Vegetation poor.—Burnt forest.—The Great Dog Portage.—View from.—Physical Structure of the Great Dog Mountain.—Black Spruce Swamp.—Labrador Tea Plant.—Coal Wells in Moss.—Good Road on the Great Dog.

Thunder Bay, Position and Extent.

Thunder Bay, which receives the waters of the Kaministiquia, forms a portion of the north-west expansion of Lake Superior. It is the most southerly of three large and deep land-locked bays which characterize this part of the coast, and it is situated between the parallels 48° 15′ and 48° 35′ north latitude, and in longitude 89° and 89° 30′ west of Greenwich. Its greatest length in a north-easterly direction is 32 miles, and its breadth from Thunder Cape to the mouth of the Kaministiquia, upon which Fort William is situated, about 14 miles.

Entrance to the Harbour exceeds 180 feet in depth.

The main entrance to the bay is between the imposing headlands of Thunder Cape, 1,350 feet above the lake level and Pie Island, five miles south-west of the cape, with an altitude of 850 feet. The depth of water in this broad entrance exceeds 180 feet, and a measure of 60 feet to 120 feet is maintained in many parts of the bay.

The Welcome Islands, Water inside, 30 feet; Water on the Bar varies from 3½ to 5½ feet.

Immediately opposite, and east of the three mouths of the Kaministiquia, the Welcome Islands are distant about two miles, and inside of these islands from 60 to 30 feet of water

is shown on Bayfield's chart. Within half a mile of the river's mouth the water shoals rapidly, and the bar has a variable depth of 3½ to 5½ feet of water upon it; but within 1,000 yards of the north or main channel, 12 to 14 feet water is maintained. Land is forming fast near the mouths of the river, and large areas in advance of the increasing delta sustain a thick growth of rushes.

Main Channel of River; Fort William situated on it; Aspect of the Country about the Fort.

At a distance of about half a mile from the exit of the northern or main channel, Fort William is situated. Upon the left or north bank, and opposite, is a large island formed by the middle channel of the Kaministiquia, which branches off from the main stream, about one mile and a half from the bay. In the time of the North-West Company this island was denuded of the trees it sustained, which consisted mainly of tamarack, for fuel and other purposes, and the greater portion is now covered with second growth. A large area south of the fort still remains destitute of wood, and forms the site of an Ojibway village, besides serving as an excellent open pasture ground for a herd of cows belonging to the Hudson's Bay Company, which swim across the river every morning, a distance of 400 feet, and return at an early hour in the afternoon to the farmyard in the vicinity of the fort

Banks of River low.—Timber, Soil, &c.

The banks of the river here are low and flat, not exceeding 10 feet in altitude. In the rear of the fort tamarack of small but dense growth prevails. The soil is a light sandy loam reposing on yellowish clay.

Mission of the Immaculate Conception.—Indian Reserve embraces much good Land.

Two miles above the fort, and in a direction nearly south from it, the third or southern outlet separates from the main channel. The banks of the river continue to rise above the level of its waters until they attain, at the Mission of the Immaculate Conception, an altitude of 18 or 20 feet. Near the mission the Indian Reserve of about 25 square miles begins; it embraces the best and largest area of cultivable land in the valley of the Kaministiquia, and much of it being situated on the flanks of M'Kay's mountain range, portions possess many advantages which do not belong to the available tracts near the shores of Thunder Bay.

M'Kay's Mountain.

The general course of the river above the Mission for a distance of 9 miles is towards the south-west, by very tortuous windings. Five miles from Fort William it approaches the base of the elevated table-land, to which M'Kay's Mountain forms an imposing and abrupt termination. M'Kay's Mountain has an elevation of 1,000 feet above the Lake, and is the north-eastern boundary of an irregular but extended plateau, whose south-eastern flank follows the trend of the coast as far as Pigeon River.

Maple and other Hardwoods grown on the flanks of M'Kay's Mountain.—The Area over which good Timber extends is very large, following the Trap Ranges.—Soil at the Mission.

It is worthy of remark, that the flanks of M'Kay's Mountain support a heavy growth of hardwood timber (maple, &c.), and from various sources I was informed that this heavily timbered land stretches far to the south-west, on the side and borders of the table-land. The rock formations which comprise the country between the Kaministiquia and Pigeon Rivers, indicate the presence of a fertile soil on the flank of the irregular table-land; the trap with which the slates are associated giving rise upon disintegration to a soil of superior character. At the Mission a light reddish loam constitutes the soil; this reposes, to a depth of 6 feet upon a bluish grey clay, which extends from the water's edge to 10 feet lower.

The Village of the Mission very thriving, and consists of 30 to 35 houses, well built of wood.

At the Mission there are already congregated from 30 to 35 houses, substantially built of wood, and in their general arrangement and construction far superior to the log houses of Canadian pioneers in the forest. Many of them were surrounded with gardens, a few of which were in a good state of cultivation, and with some small fields fenced with post and rail. Frost occurs here, under the influence of the cold expanse of Lake Superior, until the end of June, and begins again towards the end of August. A few miles further up the river, west of M'Kay's Mountain, the late and early frosts are of rare occurrence.

Freezing and thawing of the River, 15th November and 10th April.

The average period of the river freezing is from the 3rd to the 15th November, and it becomes free from ice between the 20th and 23rd of April. The present year has proved an exception in many respects: the ice did not pass out of the river until the 13th of May, and on the 1st of August, the day of my visit, the waters of the river were higher than they had ever been known before at that season of the year.

Clay Banks of the River.—Vegetation rich and luxuriant.—First Rapids.

Opposite M'Kay's Mountain the clay banks of the river were about 15 feet high, and continued to rise on one side or the other until they attained an elevation of nearly 60 feet, often, however, retiring from the present bed of the river, and giving place to an alluvial terrace, some 8 or 10 feet in altitude, and clothed with the richest profusion of grasses and twining flowering plants. The current begins to be rapid about 9 miles from Fort William, soon after passing Point de Meuron, the site of a fort established by Lord Selkirk, and continues so, in the ascending course of the stream, to the foot of the first demi-portage, called the "Décharges des Paresseux," where a rock exposure creates the rapids which occasion the portage. The fall here is 5 feet 1 inch in a distance of 924 feet. The distance of this portage from the lake, by the windings of the river, is about 22¼ miles, and the total rise probably reaches 39 feet.

The Grand Falls of Kakabeka.

The current continues rapid up to the foot of the Grand Falls, and high rock exposures commence on the precipitous banks three miles below them. These gradually assume the form of mural cliffs, capped with drift, increasing in altitude until they attain at the foot of the Grand Falls the height of about 160 feet on the left bank, while on the opposite side of the river the mountain portage path winds round the steep of a bold projecting escarpment 91 feet in altitude, and nearly half a mile from the falls.

Height of the Grand Falls.

At our camp, seven miles below the Grand or Kakabeka Falls, as they are termed, the the level of the river was estimated to be 40 feet above Lake Superior, and the foot of the falls 16 feet higher. The Grand Falls themselves were found, by levelling, to have an altitude of 119·05 feet, and involved a portage of 62 chains, or three-quarters of a mile. They are distant from the mouth of the river by its windings about 30 miles, and in an air line 17 miles.

Breadth of the Alluvial Valley of the Kaministiquia.

The alluvial valley of the river, from about three miles below the Mountain Portage to Fort William, varies in breadth from a few hundred yards to one mile; the breadth occupied by land of a quality which might fit it for agricultural purposes, extends to near the summit of the flank of a low table-land, which marks the true limit of the river valley, and the average breadth of this may be double that of the strictly alluvial portion.

Vegetation of the Valley.

The low table-land is thinly wooded with small pine, and the soil is poor and dry. The alluvial valley sustains elm, aspen, balsam, poplar, ash, butternut, and a very luxuriant profusion of grasses, vetches, and climbing plants; among which the wild hop, honeysuckle, and convolvulus are the most conspicuous. The rear portion of the valley, with an admixture of the trees just named, contains birch, balsam, white and black spruce, and some heavy aspens. The underbrush embraces hazel nut, cherries of two varieties, &c.

Area of cultivable Land in the Valley of the Kaministiquia exceeds 20,000 acres, not including the flanks of M'Kay's Mountain.

Occasionally the flanks of the low table-land approach the river, contract the valley, and give an unfavourable aspect to the country. This occurs near the Décharges des Paresseux and at most of the heavier rapids. The area available for agricultural purposes below the Grand Falls probably exceeds 20,000 acres; but if the flanks of M'Kay's Mountain be included in the estimate, a large addition may with propriety be assumed.

The Grand Falls mark the Limit of available Country for Agricultural Purposes in the Valley of this River.

The Grand Falls mark the limit of a tract of country differing in many important physical aspects from the valley of the river lower down. From black argillaceous slates we pass to a region in which granite, gneiss, and chlorita schist prevail, and where the vegetation is often scanty and poor.

Falls and rapids, with their Descents.

The course of the river is almost due north to Little Dog Lake, and its flow much broken by falls and rapids, which occasion in a distance of 19 miles six portages and five discharges. The falls have respectively an altitude of 6·59 feet; Ecarté Portage (Nicholet Portage) 12·62 feet; Portage de l'Isle (third above Kakabeka) 6·90 feet; Recousi Portage (fourth above Kakabeka) 25 feet; (Couteau Portage) 3 feet; (Portage des Martres) and 14·94 feet (Little Dog Portage).

Vegetation poor.

In the forests which lined the banks at the different discharges the canoe birch was frequently seen 18 inches in diameter, the underbrush consisted chiefly of hazel nut: wherever the gneissoid and syenite rock prevailed the valley of the river was much contracted, the timber light, and the soil shallow and full of boulders or detached masses of rock. The volume of water in the river appeared to be very small, considering its unusual height at this season of the year. An approximate measurement at one of the rapids gave a breadth of 70 with an average depth of 2 feet.

Burnt Forest. Luxuriant Vegetation on the Great Dog Mountain.

Extensive areas covered with burnt forest trees, consisting chiefly of pine, occur in the valley of the river as far as Little Dog Lake, when the formidable barrier of the Great Dog Mountain, sustaining a heavy growth of timber, comes into view. Occasionally aspens of large dimensions may be seen from the canoe, but it is not until the plateau of the Great Dog Mountain is attained that they acquire a diameter reaching 18 or 24 inches, 5 feet from the ground. Trees of this species and of the above dimensions are found in abundance on the elevated barrier which separates the region of Great Dog Lake from the valley of the Kaministiquia, 347·81 feet below.

The Great Dog Portage elevation above Little Dog Lake. View from the Great Dog Mountain.

The Great Dog Portage rises 490 feet above the level of the Little Dog Lake, and at the greatest elevation of the ridge cannot be less than 500 feet over the same lake. The difference between the levels of Little and Great Dog Lakes is 347·81 feet, and the length of the portage between them 1 mile 53 chains. The view from the summit of the Great Dog (more than 700 feet above Lake Superior) is very striking. Little Dog Lake lies at our feet, an unbroken forest of pines dotted with groves of aspen and birch, and in the swamp portions with tamarack, stretches in all directions from east to west, being bounded in the view by the distant undulating outline of the wooded hills, which limit the valley of the Kaministiquia. A portion of the abrupt escarpment of the elevated table-land in the neighbourhood of M'Kay's Mountain was distinctly visible.

Physical Structure of the Great Dog Mountain.

The base of the Great Dog Mountain consists of a gneissoid rock supporting numerous boulders and fragments of the same material. A level plateau of clay then occurs for about a quarter of a mile, from which rises, at a very acute angle and to an altitude of 283 feet above Little Dog Lake, an immense bank or ridge of stratified sand, holding small water-worn pebbles. The bank of sand continues to the summit of the portage, or 185 feet above the clay plateau. The portage path does not pass over the highest part of the sand ridge. East of the path it is probable that its summit is 500 feet, as before stated, above the Little Dog Lake.

Black Spruce Swamp.—Cool Wells in the Moss of the Black Spruce Swamp.

On approaching the source of Little Dog River a black spruce swamp was found to occupy an extensive area, but little above the level of the river. The clay soil in this swamp was covered to the depth of 2 feet with moss, which was again largely overgrown with the Labrador

tea plant. Small holes in the moss filled with clear cool water afforded a striking contrast to the heated water of the rivers and lakes; the temperature of these shallow wells did not exceed 42°, while the water of Great Dog Lake, tested a few hours afterwards (half-past five P.M.), was 69°, a difference of 27°.

A good Road could be constructed in the flanks of the Great Dog Mountain and the 143 feet of ascent.

The Great Sand Bank declines in steppes towards the river, and by turning its flank an excellent level road on the side of the first plateau could be constructed, with a length not exceeding twice that of the present portage path which rises over 140 feet above the lake to which it leads.

Section II.

GREAT DOG LAKE TO THE HEIGHT OF LAND.

Area of Great Dog Lake.—Vegetation.—Depth of water in Great Dog Lake.—Distance from Fort William.—Great Dog Lake an old centre of communication, and is connected with Mille Lacs.—Many other routes probably exist.—Professor Keating speaks of these routes 33 years ago.—Valley of Dog River.—Banks alluvial.—Ancient Forest.—Action of ice.—Labrador Tea.—Dam at mouth of Little Dog River.—Climate.—Action of ice.—Prairie River.—Sources of Dog River.—Height of Land and Barrier.—Prairie Portage.—Height of Land Lake.—Vegetable of Prairie Portage.—Temperature of Lakes and Rivers.

Area of Dog Lake about 200 square miles.

The area of Great Dog Lake, according to Mr. Murray, probably exceeds 200 square miles; and according to that gentleman, the country surrounding it is hilly, and covered with forests in which white spruce prevails, interspersed with groves of aspens, and occasionally dotted with the Weymouth (white) and Banksean (red) pines; white and yellow birch are abundant, and some of them of large dimensions. The lake is bounded by bold primary rocks, and studded with innumerable islands.

Depth of Water in Great Dog Lake very great.

The traverse of the canoe route, from the head of the Great Dog Portage to the mouth of Dog River, is about 11 miles in length, and the lake is seen to stretch far to the north of the last-named point; the canoe route follows closely the direction of its longest diameter, which is nearly due north and south; the depth of water, as ascertained by occasional soundings along the line of traverse, is very considerable. In one instance, 72 feet was recorded about 200 yards from a low rocky shore, and another sounding showed 90 feet half-a-mile from land; both of these soundings are marked on the map which accompanies this report.

Distance of Great Dog Lake from Fort William, 18 miles, in an air line.—Former extension of Dog Lake visible.

The position of this lake in relation to Thunder Bay is interesting, as it forms the termination of a long land traverse from Current River, which is used by the Indians during the winter season; its distance in an air line from Fort William is about 19 miles; whereas, by the windings of the Kaministiquia, it is 55¼ miles; the former extension of Dog Lake in a westerly direction up the valley of the river of the same name, for 14 or 15 miles, is probably shown by numerous sand ridges which cross the valley of Dog River nearly at right angles to its course, as well as by the probable former extension of a portion of the Great Sand Ridge Barrier, which has been described as occurring at the Great Dog Portage, across the valley of the Little Dog River.

Great Dog Lake an old centre of Communication for the Indians.—Is connected with Mille Lacs.

Great Dog Lake appears to be a certain centre of communication to which some degree of speculative interest may be attached; our guides pointed out the direction from one of the great westerly bays, through which a communication with Thousand Lakes, on the other side of the water-shed. No doubt the route through this communication passes through extensive marshes, yet, if it avoids the objectionable ascent of Prairie River and Portage, it may be worthy of attention. Thousand Lakes, or Mille Lacs, as it is more commonly called, is —— feet above Lake Superior, consequently above Dog Lake.

This Route an old Route.—Many others probably exist.

This route has long been known to the voyageurs and to the Indians about Fort William, and the same may be remarked of many other routes of which the Indian guides speak, and

attempt to describe. Thirty-three years ago it was an old "path," and may have been one for centuries to the Indians of this region. No doubt that water communications superior to those now travelled may yet be found, but it seems clear that until the watershed of Rain Lake is reached, no communication holding up sufficient water to form a boat route exists, or can be made without extensive and repeated dams.

Professor Keating speaks of this Route 33 years ago.

Professor Keating, so far back as 1823, relates that his party were shown an arm of the Lake which extends to the south-west, and which they were informed connects Great Dog Lake by an uninterrupted water communication with the Thousand Lakes. The route is shorter than that by Prairie Portage, but much filled with rapids. The same authority says that there is a communication between the Kaministiquia and Thousand Lakes passing more to the south than that from Dog Lake.

Valley of Dog River flooded in Spring, extending Dog Lake many miles in a westerly direction.

So sluggish is the flow of water in Dog River that a rise of 10 feet in the level of the lake would push back its waters to a distance of 35 miles up the tortuous course of that stream, and the voyageurs relate that in the spring of the year they are accustomed to paddle their canoes over the tops of the willows which fringe its bands below the first rapids, 14 miles in an air line from the mouth of the river; the greater portion of the intervening valley being then under water.

Banks of the river alluvial.—Depth small, 23 feet; rises in Spring 10 to 15 feet at the upper end of its valley.

The banks of Dog River are altogether alluvial for some distance up the valley, with the occasional exception of the abrupt sand cliffs noticed, which come upon the river and seem to form the termination of ridges, which traverse the valley at nearly right angles to the course of the stream. Recent watermarks showed a rise of 5 feet within 3 miles of the mouth of the river, and the shores of the lake itself indicated a recent water level about 4 feet above its present height (August 8th).. Higher up the stream, a recent rise of 6 feet was indicated. The banks showed alder bushes, willow, dogwood, and tamarack; its average breadth is about 80 feet in ordinary seasons; its general depth at this period of the year cannot be above 2 or 3 feet, as we were informed by our steersman, that he has often known canoes to be constantly impeded by shallows and drift islands, at times when the level was probably 4 feet lower than during the present extraordinary season.

Dog River connects with the Neepigon, and the Neepigon with English River.—Winipeg River.

The average height of the bank rises from 4 feet, a short distance from the mouth of the river, to 10 feet, 14 miles further up. At nearly every turn, newly formed oval and elongated banks of sand protruded and showed a general elevation of 5 feet above the present level. Low hills of granite begin to narrow the valley, after passing a small stream coming from the north, and said to lead to a communication with the Neepigon.

The Valley of Dog River.

From the summit of a low granite hill, perhaps 200 feet above the river bed, the surrounding country was distinctly mapped out at our feet. The valley of the river appeared to have a breadth of a mile at our point of view, widening out in the direction of Dog Lake, and contracting towards the height of land between low ranges of granite hills, which did not seem anywhere to exceed 200 to 280 feet in altitude.

Remains of an ancient Forest seen.

Some of the hills consisted of bare rock, others were covered with a young forest growth, which seemed to consist chiefly of the Banksean pine and aspen. In the distance the tops of a few hills showed clumps of red pine standing erect and tall above the surrounding forest. They may be the remnants of an ancient growth, which probably once covered a large portion of this region, having been destroyed by fire at different epochs, as large areas were still strewed with the blackened trunks of trees; and in the young bush, which seems fresh and green at a distance, the ground was found to sustain the charred remains of what had once been a far more vigorous vegetation.

Hill abraded, probably by Ice.—The Labrador Tea common.

The low ranges of hills bear a great outward resemblance to those which surround Dog Lake. No precipitous escarpments are visible, but most of them have a rounded, dome-like aspect, and close inspection of some of them gave strong indications of the abrading action of ice. Large quantities of Labrador tea (*Ledum palustre*), were seen everywhere we landed. The flow of the river until we approach a stronger current, 25 miles from Dog Lake, varies from a half to one mile an hour.

General Character of the Valley of Dog River similar to that of Dog Lake.—Effect of a Dam at the mouth of Little Dog River.—Boulders left by Ice on a Ledge of Rock, on the margin of the River.

The general character of this valley is very uniform, and the idea presented to the mind in endeavouring to picture its aspect when covered with water in the Spring was that a general rise of 20 or 25 feet would give it an appearance very similar to Great Dog Lake; with analogious deep bays formed by the valleys of its tributaries, and having on its shores hills of the same altitude and similar formations as are found bordering the lake below; in fact, a high (25 feet) dam, as has already been hinted, at the source of Little Dog River, might perhaps convert Dog Lake into a magnificent sheet of water, having in a westerly direction a further extension of at least 15 miles. It would remain, however, to be ascertained whether Dog Lake has not other outlets than the one which leads through Little Dog River. It is not at all improbable that this may be the case.

Difference in the Climate of the Grand Falls and this Part of the Dog River Valley.—Difference in Altitude 542 feet.

At our camp on the 9th of August, at the head of a small portage round a fall of 3½ feet, about 3 miles below the mouth of Prairie River, blue berries, not yet ripe, were very abundant, showing a marked difference in the climate of this spot, and the Grand Falls, where some days before we had found them perfectly ripe, and in the greatest profusion. The difference in elevation is about 542 feet. About a quarter of a mile from the camp, in our course up the river, we came upon a bare granite hill, about 250 feet high, ascending from the water's edge, at an angle of nearly 45°, its surface, consisting of smooth rounded ridges; and about 15 feet above the river a collection of water-worn boulders, from 6 inches to 2 feet in diameter, were deposited upon a ledge, leading to the inference that they had been left there by ice during spring freshets, and so far showing some confirmation of the statements of the Indians respecting the remarkable rise of water in the long valley during the spring months.

Prairie River only 10 feet broad.—Dog River.

The last portage on Dog river in the canoe route to Fort Francis is the Jourdain Portage, 4 miles in an air line from the height of land. It involves an ascent of 8 60 feet by a portage 6½ chains long; a very short distance above it, the mouth and windings of Prairie River are seen with difficulty through the tall rushes which seek to conceal its course for a distance of 200 or 300 yards. Up this little streamlet, scarcely 10 feet broad, the canoe route lies, while Dog River, still measuring a breadth of 40 feet, can be traced far to the north by a succession of small lakes and ponds which mark its course.

Prairie River to Cold Water Lake.

Prairie River is scarcely more than 10 feet broad at its mouth, and for a few hundred yards it is so thickly fringed with rushes that two canoes cannot proceed side by side, or even pass one another with facility. The length to Cold Water Lake is about 1¾ miles in an air line, and perhaps nearly double that distance by its windings; its general course is a few degrees to the south of west. Much of the route towards the high barrier of land at Cold Water Lake, which now comes into view, lies through small marshy lakes or ponds, three in number, and the whole distance does not exceed three miles. The barrier behind Cold Water Lake, which stretches far to the north and south, may rise 200 or 220 feet in height, the end of the portage path over it, according to measurement at the Height of Land Lake being 157 feet above the lake. It constitutes the great and formidable prairie or Height of Land Portage, two miles and five-eighths of a mile long. Cold Water Lake is well-named on account of its temperature. Careful observation made it 41·5°, and the large spring or source which feeds it, and gives rise to the Prairie River, gushes out of the rocky side of the barrier, about 50 feet above the lake, with a temperature of 39·5°.

Prairie Portage does not pass over the highest Land between Lake Superior and Rainy Lake.—Height of Land Lake 157 feet above Cold Water Lake, and 885 above Lake Superior.

Prairie Portage passes over the height of land, but not the highest land on the route, and its course lies first south-west up a steep wooded hill, without rock exposure, but composed of drift clays, sand, and numerous boulders; it then enters a narrow valley, which terminates in a small lake, about five acres in area, and twenty feet deep, occupying a hollow among the hills on the height of land. The portage path continues on in the same direction until the Height of Land Lake is reached, a small sheet of water, about a square mile in area, and 157 feet above Cold Water Lake. The utmost elevation reached on the Prairie Portage is probably 190 feet above Cold Water Lake, or nearly 900 feet above Lake Superior. It is probable that no hill within sight attained an elevation exceeding twenty or thirty feet above this limit. Mr. Dawson makes the Height of Land Lake 879 feet above Lake Superior.

Prairie Portage sustains good-sized Spruce and Pine.—Labrador Tea common.—Fragrant Indian Tea common.

Prairie Portage sustains some spruce and pine of fair dimensions. A considerable portion of the timber is burnt, and the underbrush everywhere shows a profusion of hazel nut, and small shrubs and plants, such as raspberries, blue berries, gooseberries, and strawberries, all of which were here gathered ripe, the Labrador tea (*Ledum palustre*) was in great profusion in particular spots, and at the termination of the portage, near the Height of Land Lake, the fragrant Indian tea plant (*Ledum talifolium*) abounded in the moss bordering this elevated sheet of water, which is 885 feet above Lake Superior, or 1,485 above the sea.

Temperature of Lakes and Rivers.

TABLE of the Temperature of Lakes and Rivers from Lake Superior to the Height of Land.

Name of Lake or River	Temperature of Lake or River.	Day.	Hour.
	° ′		
Lake Superior, fifty miles from land	39 5	July 30	Noon.
„ „ four miles from the Paps	46 0	„ 31	..
Thunder Bay, 500 yards from the mouth of Current River	65 0	August 2	4 P.M.
Kaministiquia, opposite the Mission	70 0	„ 2	1 „
Kaministiquia	68 0	„ 3	6 A.M.
„	65 0	„ 4	6 „
„	65 0	„ 5	6 „
Spring at Kakabeka Falls	45 0	„ 5	Noon.
Kaministiquia	65 0	„ 5	„
Water in Spruce Swamp, Great Dog Portage	42 0	„ 8	„
Great Dog Lake	69 0	„ 8	5 P.M.
Dog River	69 0	„ 9	3 „
„	68 0	„ 10	6 A.M.
„	66 0	„ 10	10 „
Prairie River	62 0	„ 10	10½ „
First Lake on Prairie River	39 0	„ 10	11 „
Reedy Swamp	63 0	„ 10	11½ „
Lake at foot of Prairie Portage	56 0	„ 10	12 „
Mouth of stream issuing from Cold Water Lake	43 0	„ 10	12 „
Cold Water Lake	43 0	„ 10	12 „
„ „	41 5	„ 10	12½ „
Sources of Prairie River, one of the sources of the St. Lawrence	39 5	„ 10	1 „

SECTION III.

THE HEIGHT OF LAND LAKE TO RAINY LAKE.

Height of Land Lake.—Savanne Lake.—Savanne Portage.—Savanne River.—Vegetation and Banks of the River.—Mille Lacs.—Sail Rocks.—Baril Lake.—Ancient Line Forest.—Scenery of the Side Hill Path.—Height of Bruló Hill.—French Portage.—Ancient Forest near Pickerel Lake.—Vegetation of Portage de Pins.—Scenery and Country about Sturgeon Lake. Cascades of Sturgeon Lake.—Island Portage.—Namcaukan Lake.—Rainy Lake.

Height of Land Lake.—Savanne Lake.—Pitcher Plant.

The summit or Height of Land Lake is about the third of a mile broad, but its length from north-west to south-east could not be determined on account of the vast expanse of rushes, with islands of tamarack, which seemed to blend it with an extensive marsh stretching far in both directions. A portage about half a mile in length, letting us down sixteen and one-third feet, brings Savanne Lake into view. The shores of this reedy expanse of water are fringed with Labrador and Indian tea, and here, too, for the first time, the beautiful

Indian Cup or Pitcher Plant (*Sarracenia purpurea*), once so common at the Grenadier Pond near Humber Bay, Lake Ontario, was seen in great profusion. From near the summit of a pine-tree, a slight depression to the north and north-east of the dividing ridge was observed in the generally level outline of the horizon; by this depression it seemed probable that the waters of the height of Land Lake and its connecting swamps drained into Dog River. With this exception the horizon appeared to be perfectly uniform, the slight difference in the height of the tamaracks and spruces, which seemed most to abound, furnishing the only deviation from a perfectly level expanse in all other directions.

Savanne Lake.

The Savanne Lake, with its feeding swamps, may therefore be considered to be the source of the waters which, in this latitude, send tributaries to Hudson's Bay; although the Indians say that there exists a connection between the height of Land Lake and Savanne Lake; the portage between them is named Portage de Millier, and passes over a low sandy ridge supporting small pine, and at its edge tamarack and spruce. Savanne Lake is about one mile broad; at its south-westerly termination begins the Great Savanne Portage, as well as its outlet, in the form of a small stream, much encumbered with fallen trees, and connecting with Savanne River. By this small stream canoes pass when the water is high, and thus avoid the troubles of the Great Savanne Portage.

Condition of Savanne Portage.—Remains of old Road. Portage once good.—Can be made good at small cost.

This common dread of the voyageurs is one mile and forty-one chains in length, it descends thirty-one and a half to Savanne River, and consists of a wet tamarack swamp, in which moss grows everywhere to the depth of one foot or eighteen inches; the moss is supported by a retentive buff clay, which is exposed at the western extremity of the portage. The remains of an old road, probably constructed in the time of the North-West Company, passes through it, and is formed of split trees, now in a thorough condition of decay. The same may be said of all the swampy portages along this line of route. In the time of the North-West Company this portage was doubtless one of the best, considering its length and general character, but now a false step from a rotten or half floating log, precipitates the voyageur into eighteen inches of moss, mud, and water. No physical impediment appears to exist which would prevent this portage from being drained at a very small cost, and converted into one of the best on the whole line of route.

Savanne River.

Savanne River, to which it leads, is very rapid a little above the landing place; but by wading up the stream for about a quarter of a mile, the occurrence of dead water without froth or bubbles, showed that the feeding swamp or lake was near at hand. Savanne River is about twenty-five feet broad here, and it continues a very meandering and crooked westerly course of about thirteen miles to Mille Lacs, or Lake of the Thousand Islands, as it is sometimes termed.

Banks of the River—Vegetation.

The banks of this river are altogether alluvial, and diminish gradually from ten feet in altitude near its source, to the level of Mille Lacs, at its entrance into that extensive and beautiful sheet of water. The immediate banks of Savanne River are clothed with alder, willow, and dogwood; behind these are seen tamarack, pine, spruce, and aspen. Near its mouth much marshy land prevails, and at its confluence with Mille Lacs is characterized by a large expanse of rushes and other water plants common in such situations.

Area of Mille Lacs.

Mille Lacs is described by the Indians as extending in a direction due west much farther than was visible from the canoe route, on account of the numerous islands with which it is everywhere dotted. In the lower portion of the Savanne River many large ponds and reedy lakes, connected together by small watercourses, join with the main river, and indicate the great extension which Mille Lac assumes in an easterly direction during spring freshets. It appears very probable that a length of thirty miles, with an average bredth of six—ten miles may be taken as a fair representation of this remote sheet of water; the canoe route though it is twenty-one miles in length, from the mouth of the Savanne to Keg or Baril Portage; granitic dome-shaped islands are very numerous, and occasional exposures of clay and sand banks come into view on the points and islands along the line of route.

White Quartz, Sail Rocks.

The hills here and there bear pine of fair dimensions, while in the narrower and shallower valleys between them there is every indication of hard wood over large areas. Exposures of white quartz are repeatedly seen on the islands and main land at the western extremity of the lake; and not unfrequently are they taken by travellers during their first voyage for the sails of distant boats. The name "sail rock," given to them by the voyageurs, is derived from this erroneous impression. Where the lake narrows on approaching Baril Portage, gneissoid hills and islands about 100 feet high showed a well-defined stratification dipping north, at an angle of about fifteen degrees, and on that side smooth, and sometimes roughly polished on the south side, precipitous and abrupt. The same character was noticed at the Baril Portage, which has a length of sixteen chains eighty-five links, with an altitude of seventy-two and a half feet, and an ascent of 1·86 feet. The north-eastern exposure of the rocks here was smooth, the southern rugged and often precipitous.

Baril Lake.—Large dead Pines.—Large living Pines.

Baril Lake is seven and a half miles long, and is the counterpart of the western extremity of Mille Lacs. It is terminated by the Brulé, or Side Hill Path Portage, twenty-one chains long, leading to Brulé Lake, forty-seven feet below Baril Lake. At Brulé Portage I ascended a steep hill bordering a small rapid stream called Brulé River, and from an altitude of fully 200 feet, had a fine view of the surrounding country. The vegetation upon the hill side and summit was truly astonishing, and the term Brulé Portage received an unexpected interpretation on finding, hidden by a rich profusion of brushwood, the dead trunks of many noble pines. Throughout the day the tall trunks of white pine, branchless and dead, rising in clumps, or in single loneliness far above the forest, had attracted attention; and on the side of the Brulé Hill we observed many prostrate half burnt trees of the largest size.

Ancient White Pine Forest.—Luxuriant Second Growth.—Scenery of Side Hill Path.

There can be little doubt that these were the remains of a magnificent white pine forest, which extended formerly over a vast area in this region, since from the summit of the hill these remains in the form of scattered living trees, or tall, branchless scattered trunks, met the eye in every direction. The second growth indicated a soil not incapable of sustaining pine trees of the largest proportions; black cherry, birch, white and black alder, small clumps of sugar maple, and a thick undergrowth of hazel nut now occupies the domain of the ancient forest. The south-west side of this hill formed a precipitous escarpment 150 feet above the waters of a long clear lake. All around the eye rested upon low dome-shaped hills dipping towards the north-east, and covered with a rich profusion of second growth. The vast wilderness of green being dotted with black islands of burnt pine, with a few detached living remnants, serving by their surprising dimensions to tell of the splendid forest which must have once covered the country.

Height of Brulé Hill above the Sea.

The soil, wherever examined, consisted of a red sandy loam, covered with a thin coating of vegetable mound. Occasionally bare rock exposures protruded, and granitic boulders were numerous. The uniform size of the second growth timber on this Brulé Hill, seemed to prove that the great fire which devastated this region may have occurred about thirty years since. The hill round which the portage path winds is considerably higher than any observed range on the height of land, and its summit, from which a view of the surrounding country was obtained, is probably about 100 feet above the height of Land Lake, or 1,585 feet above the ocean level; M'Kay's mountain having an elevation of 1,600 feet above the same level.

French Portage.

From Brulé Lake to French Portage, a distance of four miles, the canal route lies through a series of lovely lakelets, and short rapid streams fringed with cedar and spruce, and behind these fair-sized red pine, birch, aspen, and large spruce. French Portage, bearing due west, is one and three-quarter miles long, and lets us down ninety-nine and three-quarter feet into French Portage or Pickerel Lake. The timber on this portage consists of aspen, red pine and spruce. On the shores of the lake low hills appear, and are timbered with extensive forest red pine, varied with patches of spruce, aspens, and birch.

Ancient Forest near Pickerel Lake.

Pickerel Lake, through which in a direction nearly due south-west the canoe route now

runs, is a fine sheet of water thirteen miles long by two to four broad; its shores consist of low hills covered with fine forest pine, with spruce, aspens, and birch in the valleys. On the east side of the lake the remains of an ancient pine forest are often visible in the forms of noble detached trees. These occur about six miles from its head, and here, too, may be occasionally noticed small groops of the same trees rising far above the comparatively young growth which now surrounds them. The half burned standing trunks of huge dimensions, show the extent and character of the earlier forest, and the cause which destroyed their companions. White Pine in numbers still remain at the foot of the lake, and were seen at the portage, which is called Portage du Pin, also Portage des morts. The first name is evidently derived from the prevalence of large red and white pine here; its length is twenty-six chains, and its descent is 6·9 feet, leading into Jack Fish or Doré Lake, a small sheet of water about a mile across, but extending much further in a north-westerly direction.

Fine Vegetation of Portage des Pins.

Among the trees observed here, remarkable for their size, ceder, ash, white and red pine, with birch of two kinds, may be enumerated. The cedar is far superior to any before seen. A clay subsoil is found in the valley of a small river running near the portage path, and the up-turned roots of trees on the hillside showed fine washed white sand upon which a sandy loam was imposed. The foot of Doré Lake brings us to the Portage des Deux Rivières, which lets us down into Sturgeon Lake 117·21 feet, in a length of thirty-two chains.

Scenery and country about Sturgeon Lake.

The whole country seems to sink with the French Portage and the Deux Rivières Portage. The hills about Sturgeon Lake at its upper end are not above 100 feet high, and if the valleys and lakes were filled up between the tract of country south-west of French Portage, it would be nearly a level plain, with a slight south-westerly descent. In Sturgeon River, leading to the lake of that name, we meet with the first marshy place since leaving the mouth of the Savanne River. The canoes here were forced through a profusion of aquatic plants, among which the beautiful white water lily, with its golden-hued companion frequently occurred. Willows, small aspen and alder, grew on the banks, but no hill or elevated table land was visible from the shallow but tortuous river, choked with aquatic plants, through which we forced our way into the main body of Sturgeon Lake. Once on the open lake, hills about 200 feet high rose into view at some distance on the eastern side. The bushy tops of what appeared to be a grove of elms were seen near the head of this large and beautiful sheet of water; again wide tracts of burnt land attract attention, with a few white pines, remains of a forest long since destroyed. The north-eastern termini of hill ranges slope to the water edge, and when bare, are found to be evenly smoothed and ground down. Everywhere on the shores of the first large expansion of the lake remains of an ancient forest lay black and branchless, or still flourished green and erect amidst a vigorous undergrowth of spruce and aspen.

Lac la Croix.

Sturgeon Lake and River, or rather a succession of lakes and rivers bearing the above names, extend for thirty-six miles from the Portage des Deux Rivières to Island Portage, which leads into Pine Lake, a small sheet of water connected by means of a broad river about three and a half miles long, with the great Nequanquon Lake, or Lac la Croix.

Nine miles from its head Sturgeon Lake was found to have forty-five feet depth of water, with a mud bottom. The temperature of the lake was sixty-eight degrees at 6 P M.; the pines and balsams growing near the shore were seen to be scraped or barked for about a foot near the ground by Indians, for the purpose of procuring gum or resin.

Beauty of Sturgeon Lake.

No lake yet seen on the route can bear comparison for picturesque scenery with Sturgeon Lake. The numerous deep bays, backed by high-wooded hills or rocks, rugged or smooth, according to their aspects, its sudden contraction into a river breadth for a few yards between large islands and the equally abrupt breaking out into open stretches of water, offered a constant and most pleasing variety of scene. The high jutting points of granite rock which here and there confine the channel, offer rare opportunities for beholding on one side an intricate maze of island scenery, and on the other an open expanse of lake, with deep and gloomy bays stretching seemingly into the dark forest as far as the eye can reach.

Cascades of Sturgeon River.

The fourth large expanse of Sturgeon Lake is limited by low densely-wooded shores, with high hill ranges in the far distance. The first cascades, with a fall of four and a half feet, occur at the foot of this last expansion; these are quickly followed by the second falls of six and a quarter feet descent, then occurs a narrower reach of river for three miles, which is terminated by the third rapids of two and a half feet fall, leading to another expanse with a general direction nearly due west; white cedar now becomes common, and the fourth and fifth rapids occur within four miles of one another, and are followed by Island Portage two miles further on.

Island Portage.

Island Portage lets us down ten feet, and involved a portage of fifty yards. Crossing the small Pine Lake, the river now assumes a course nearly due west, and, within a distance of four miles, brings us to a north-eastern arm of Lac la Croix. The canoe route passes near the north shore of this extensive and beautiful lake. High precipitous rock exposures begin to show themselves, often clothed with dense groves of pine rising above the mass of light green aspen foilage which prevails. Although Lac la Croix is fourteen or fifteen miles long, yet our traverse did not exceed eight, as we entered the Namcaukan river which issues from the north-western coast, and takes a circuitous north-westerly direction, bringing us to the Snake Portage, where the river descends by a beautiful cascade 12·14 feet, involving a portage of 110 yards. Rapids and falls now follow in quick succession on Namcaukan River, which has a circuitous course of about eighteen miles before it debouches into Namcaukan Lake. Following Snake Lake are Crow Portage with 9·88 feet fall; Grand Falls Portage, sixteen feet; and the great and dangerous Namcaukan Rapids letting the river down by steps, perhaps also sixteen feet. The shores of Namcaukan River show the Bankean pine in abundance with aspen and at its mouth growing elm.

Namcaukan Lake. Rainy Lake.

The traverse across Namcaukan Lake is six and a half miles in length, the lake itself extending for more than double that distance in a due west direction. At the extremity of the traverse is the new portage, where the descent is eight and a half feet. A circuitous narrow river, without perceptible current, passing through a reedy expanse fringed with low willow for about three miles. The canoe route then takes a winding course, whose general direction is nearly due north, for a distance of two and a half miles, when turning due westward we suddenly arrive at the open and beautiful but indescribably barren and desolate region of Rainy Lake.

Section IV.

RAINY LAKE TO THE MOUTH OF RAINY RIVER.

Description of Rainy Lake.—Shores low and sterile.—Height above the Sea.—Period of freezing and thawing.—Entrance into Rainy River.—Description of Rainy River.—Farming and Gardening operations at Fort Francis.—Depth of Snow. -Lac la Pluie Indians.—Swamp in the rear of Rainy River.—Area of available land.—Rich vegetation of Rainy River.—Extreme beauty of Rainy River.—Soil reposes on clay.—Indian encampments.—Heights of the Banks.—Height of the water.—Rapids of Rainy River.—Water communication between Rainy Lake and the extremity of the Lake of the Woods.—Underground houses.—Character of the Valley near the Lake of the Woods.

Description of Rainy Lake.

Rainy Lake, or Lake la Pluie as it is more frequently called by the voyageurs, is 225 miles west of Lake Superior and eighty-five south-east of the Lake of the Woods. It is fifty miles long by thirty-eight and a half broad and is 294 round by canoe route. Its form is that of three equal troughs, the main one running in an east and west direction, the other two northerly from it. It is through the main trough that the canoe route lies from the mouth of Namcaukan River in latitude 48° 30′ north, longitude 92° 40′ west, to the source of Rainy River, thirty-eight miles distant, in a direction a few degrees to the North of West.

Shores of Rainy Lake sterile and rocky; Timber poor.

The shores of Rainy Lake are generally low, and often consist of naked shapeless masses of rock with marshy intervals, or they rise in ridges which become hills 300 to 500 feet high, half a mile to four miles from the lake. The timber seems to be very small and thin in the marshes, and on the highlands, which exceed 500 in number, the largest growth were observed. on the whole the general aspect of the shores of Rainy Lake is very forbidding, and furnishes

almost everywhere, on the ridges and hill flanks, a picture of a hopeless sterility and desolate waste. Dr. Bigsby says that there is but little loose debris about Rainy Lake, the earth or gravel banks being few and seldom exceed a few feet in thickness. Whenever this land rises, for the most part bleached and naked rocks occur for many square miles together.

Height of Rainy Lake above the Sea.

Colonel Lefroy made Rainy Lake 1,160 feet above the sea by barometrical measurement. Its height deduced from the levels taken at the portages, and the estimated rise and fall in the current of the rivers along the line of route was 1,035 feet (Mr. Dawson). In this estimate the level of Lake Superior is taken at 600 feet above the ocean. Major Long found it to be 1,200 feet above the same level. The water of the lake is clear, but warm during the summer months ; its depth is generally small.

Period of freezing and thawing of Rainy Lake.

Rainy Lake freezes about the 1st December, and is open about the 1st of May, as is usually the case where large rivers issue from spacious lakes the discharging stream is not frozen for a number of miles from its source. The warm waters coming from beneath a shelter of ice in their capacious feeding lake retain their heat so as to enable them to resist the cold of these regions for many miles below the Great Falls.

Entrance of Rainy River, a new Country.

At the entrance of Rainy River on the evening of August 19, the delightful odour of the balsam poplar (*populus balsamifera*) loaded the air, and seemed to welcome our arrival in a region differing altogether from those through which we had lately passed. Where Rainy River issues from Rainy Lake it is a broad and rapid stream, with low alluvial banks clothed with a rich second growth. The forest with which they were once covered had long since been stripped of its ornaments by the occupants of the old North West and the present Hudson's Bay Company Fort.

Description of Rainy River.—Affluents of Rainy River.

The general course of Rainy River is a few degrees to the north of west, for a distance of eighty miles, by the windings of the river, and in an air line sixty miles. The rapids at its source offer no impediment to skilful navigation, nor do the whirlpools which usually accompany the passage of such a large body of water, in consequence of their being distributed over a wide area. Two miles below the source Fort Francis is situated on a high bank, just below the Great Falls. These magnificent cascades let the river down 22·88 feet, and at their fort is a famous fishing ground from which the Lac La Pluie Indians obtain an abundant supply of their staple food. Three miles from Fort Francis the river takes a sudden southerly bend, which it maintains for a distance of four miles; it then again assumes a course due west for about sixteen miles, and receives the Pekan, or Little Fork ; the Missatchambe, or Big Fork ; and the Kakmaskatawagan rivers, on the south or United States sides ; the course then turns abruptly due north, and continues for a distance of six and a half miles, when it again resumes a westerly direction for eighteen miles; its otherwise gentle and uniform current is here broken by the Manitou Rapids and Long Rapids, which let the river down about two and a half feet and three feet respectively ; six miles from the Long Rapids a short northerly bend again occurs, after which the river, with slight meanderings, pursues a north-west by west direction until it debouches into the Lake of the Woods. In this part of its course it receives on the British side small sluggish streams, known by the names of Kiskarko, Kahlawakalk, and Kawawakissinick streams, and from the territory of the United States the Muttontine, the Wishahkepekas, and Kapowenekenow rivers. Its affluents on the British side are insignificant outlets to the swamps which occupy the region north of Rainy River valley ; but some of those on the United States side are of important dimensions.

Farming and Gardening Operations at Fort Francis.—Depth of Snow.

Fort Francis, two miles from the source of Rainy River, is situated on the right bank, in latitude 48° 35′, and longitude 93° 40′. Mr. Pether, the gentleman then in charge, stated that the river never freezes between the falls and the Little Fork, a distance of twelve miles, nor between the falls and its source in Rainy Lake. Wheat is sown at this establishment of the Honourable Hudson's Bay Company, from the 20th to the 23rd May ; it ripens about 1st September. Potatoes, turnips, carrots, and indeed all common culinary vegetables, succeed

well. Potatoes are dug in the first week of October, and barley is ripe by the middle of August. Snow falls here to the depth of four feet.

Lac la Pluie Indians.

The great enemies to extended cultivation are the Lac la Pluie Indians. They are not only numerous, but very independent; and although diminishing in numbers, they sometimes hold near Fort Francis their grand medicine ceremonies, at which five and six hundred individuals sometimes assemble. The number of Indians visiting this fort for the purpose of trade reaches 1,500. They do not scruple to jump over the fences, and run through the ground crops, if their ball in the game of ——— is driven in that direction.

Swamps in the rear of the Valley of Rainy River.—Area of Available Land.

In the immediate neighbourhood of Fort Francis, the swamp or morass bounding the valley of Rainy River on the right bank, is about half a mile in its rear. This swamp, which extends from Rainy Lake to the Lake of the Woods, is described by Mr. Pether and the Indians who were questioned about it, as consisting of a springy, moveable surface, overlying a vast deposit of peat, through which a pole might frequently be pushed to the depth of thirty feet, without reaching the bottom. The surface sustains low bushes, with here and there islands of small pine. Its borders approach and recede from Rainy River with the windings of that stream; the breadth of the dry wooded and fertile valley varying from half a mile in the rear of Fort Francis, to ten or twelve miles in the direction of the Lake of the Woods. The average breadth of superior land for a distance of seventy miles might perhaps, with propriety, be assumed to be not less than six miles, giving an area of available soil of high fertility, exceeding 260,000 acres; and there can be little doubt, that with the progress of clearing, much that is now included in the area occupied by swamp, would without difficulty or expense be retained.

In describing the general aspects of the banks and valley of Rainy River, it will be advantageous to sketch with considerable minuteness the features of the soil and vegetation at the different stopping places, where very excellent opportunities were offered for acquiring information on these particulars, and in this description as well as in delineations of other localities in the valley of this beautiful river, I prefer to embody in this Report the notes made at the time, in preference to a general sketch of the whole.

Rich vegetation of Rainy River.—Elm three feet in diameter.

The ground around us at our camp, twelve miles below Fort Francis, is covered with the richest profusion of rose bushes, woodbine, convolvulus in bloom, Jerusalem artichoke (helianthus) just beginning to flower, and vetches of the largest dimensions. Fringing this open interval of perhaps 280 acres in extent, are elms, balsams, poplar, ash, and oak. One elm tree measured three feet in diameter, or nine feet eight inches in circumference; and there is no exaggeration in saying that our temporary camping place is like a rich overgrown and long-neglected garden. The golden rod is showing its rich hue in all directions, and gives a distinct yellow tint to an open grassy area on the opposite side of the river.

Extreme beauty of Rainy River.—Soil on Clay.—Lodge Poles on Indian Encampment.

Similar intervals to the one on which we are now encamped have been noticed occasionally; and hitherto the banks have maintained an average altitude of about forty feet, bearing a fine growth of the trees before enumerated. No part of the country through which we have passed from Lake Superior northwards can bear comparison with the rich banks of Rainy River thus far. The river has preserved a very uniform breadth, varying only from about 200 to 300 yards. The soil is a sandy loam at the surface, much mixed with vegetable matter. Occasionally, where the bank has recently fallen away, the clay is seen stratified in layers of about two inches in thickness, following in all respects the contour of what seems to be unstratified drift clay below. Basswood is not uncommon, and sturdy oaks, whose trunks are from eighteen inches to two feet in diameter, are seen in open groves with luxuriant grasses and climbing plants growing beneath them. The lodge poles of an Indian camp of former seasons are covered with convolvulus in bloom, and the honeysuckle is twining its long and tenacious stems around the nearest support, living or dead.

Height of Banks.

The banks of the river maintain for twenty miles an altitude, varying from fifteen to sixty feet. Occasionally, the banks show the abrupt boundaries of two plateaux, the lower

boundary having the form of a sloping bank or an abrupt cliff from fifteen to thirty feet in altitude; on the river the upper plateau rising gradually or abruptly from fifteen to twenty feet higher, according to its position with reference to the river. There is every appearance in places of fire having destroyed a former larger growth of trees than those which now occupy these areas.

Height of the Water at this season of the year very unusual.

The extraordinary height of the water at this season of the year is seen by the lodge poles of the former Indian encampments at the foot of the bank. They are under water to the depth of one and even two feet. The river does not appear to rise high in the spring, as the trees fringing the banks to the water's edge show no action of ice. The difference between the highest and the lowest water levels may be seven feet, and no record of recent higher levels meet the eye.

Rapids of Rainy Lake.—Length of Water Communication from Rainy Lake to Lake of the Woods.

The rapids of Rainy River let us down about five and a half feet, and appear to be caused by a belt of rock crossing the river at nearly right angles to its course. On the American side the hill range has an altitude of about eighty feet. On the Canadian side it is much lower, and appears rapidly to subside in gentle undulations. The rapids of Rainy River, two in number, are capable of being ascended by a small steamer of good power without difficulty, and cannot be considered as presenting an obstacle to the navigation of this important stream as long as the water maintains its present altitude, which is about three feet higher than is usual at this season of the year, but often exceeded in the spring and fall.

Tumuli or Underground Houses on Rainy River.—The remarkable Luxuriance of Vegetation.

At the second rapids an extensive area destitute of trees presents a very beautiful prairie appearance. Here we landed to examine two immense mounds which appeared to be tumuli. We forced our way to them through a dense growth of grasses, nettles, and Jerusalem artichokes, twisted together by wild convolvulus. On our way to the mounds we passed through a neglected Indian garden, and near it observed the lodge poles of an extensive encampment. The garden was partially fenced, and contained a patch of Jerusalem artichokes, six and seven feet high in the stalk, and just beginning to show their flowers. The wild oat attained an astonishing size, and all the vegetation exhibited the utmost luxuriance. The mound ascended was about forty feet high and one hundred broad at the base. It was composed of a rich black sandy loam, containing a large quantity of vegetable matter. On digging a foot deep no change in the character of the soil was observable. The Indian guide called them underground houses.

The remaining portion of the Rainy River exhibited features similar to those already described.

Character of the valley near the Lake of the Woods.

As we approached the Lake of the Woods the river increased in breadth, and at each bend a third low plateau was in process of formation, often 200 and 300 acres in area, and elevated above the present high-water level from one to three feet. Coarse grasses grew in great abundance upon many of these rich outlying alluvial deposits, and it appeared very probable that in ordinary seasons they would furnish some thousand acres of rich pasture land, as the grasses they sustain are like those which on the Kaministiquia, the settlers cut for their winter supply of fodder for cattle. Near the mouth of the river the tall tops of a few red and white pine are seen, which rise far above the aspens, occupying the lower plateau, while a vast reedy expanse, probably in ordinary seasons available for grazing purposes, marks the junction of Rainy River with the Lake of the Woods.

Section V.

Lake of the Woods and the Winipeg River.

Dimensions and Divisions of the Lake of the Woods.—Distance of the north-west corner from Red River.—Scenery.—Effects of refraction. Profuse confervoid growth.—Depth of water.—Extraordinary temperature of the Lake due to the "weed."—Fishing ground 120 feet deep.—Ice five feet thick forms.—Garden Island, Indian corn cultivated.—Shoal Lake.—Distance of Shoal Lake from Red River.—Inland Scenery.—Channels of the Winipeg.—Magnificence of the Caverns.—Character of the River.—Rat Portage.—View from a hill.—Character of the country on the Upper Winipeg.—Islington Mission.—Cultivable areas on the Winipeg.—Wild Rice Grounds.—Game.—The Pennawa River.—Birds in the rice grounds.

Dimensions and Divisions of the Lake of the Woods. Distance from Lake Superior. North-west corner of the Lake, about ninety miles from Red River in an air line.

The Lake of the Woods is about seventy-two miles in length, and the same in breadth. It is 400 miles round by canal route. It is broken up into three distinct lakes by a long promontory, which in periods of high water becomes an island. The southern part is termed the Lake of the Sand Hills; the eastern portion White Fish Lake, and the northern division the Lake of the Woods. White Fish Lake and Lake of the Woods are separated from Sand Hill Lake by the broad promontory before referred to, respecting which little is known. The name of the latter division is derived from the vast numbers of low sand hills which occupy its south-western coast. The distance of the Lake of the Woods from Lake Superior is, north-west, 340 miles by the Pigeon River route, and 381 by the route from Fort William, followed by the expedition. The north-west corner of the lake is only about ninety miles from Red River, in an air line. Its elevation above Lake Superior is 377 feet, or 977 feet above the sea. Major Long makes it 1,040 feet above the ocean level, a difference of only sixty-three feet.

Scenery of the North-west Corner beautiful.

The scenery among the islands towards the north-west corner of the lake is of the most lovely description, and presents in constantly recurring succession every variety of bare, precipitous rock, abrupt timbered hills, gentle wooded slopes, and open grassy areas. Some of the islands are large and well timbered, others show much devastation by fire, and often a vigorous young undergrowth of a different kind of tree under the blackened trunks of branchless pines.

Effects of Refraction.

The ordinary course of the canoe route to Red River lies in a north-easterly direction, following the trend of the coast towards Turtle Portage, which leads from the Lake of the Sand Hills to White Fish Lake. In pursuance of our intention to endeavour to pass from the west side of the Lake of the Sand Hills across the country, in as direct a line as possible to Red River, we made a traverse in a north-westerly direction towards the south point of Keating Island, a distance of sixteen miles. The surface of the lake was perfectly smooth, reflecting the sun's rays with extraordinary power and brilliancy. As we receded from the shores the low sand dunes to the south-west were refracted into the similitude of distant mountain ranges, and what seemed through a glass to be the rocky coast of the eastern side, into high, precipitous, half wooded cliffs.

Profuse confervoid growth, thirty-five and thirty-six feet deep, four and nine miles from land.

About four miles from land the water became tinged with green, deriving its colour from a minute vegetable growth (conferræ), which increased as we progressed, until it gave the appearance to the lake of a vast expanse of dirty green mud. On lifting up a quantity of water in a tin cup, or on looking closely over the side of the canoe, the water was seen to be clear, yet sustaining an infinite quantity of the minute tubular needle shaped organisms, sometimes detached, and sometimes clustered together in the form of small spherical stars, varying from a quarter to half an inch in diameter. Five miles from the shore the lead showed thirty-five feet of water, and four miles further on thirty-six feet; the green conferræ increased in quantity, and the little aggregations assumed larger dimensions, some of them exceeding one inch in diameter.

Extraordinary Temperature of the Lake of the Woods due to the Weeds.

The temperature of the Lake near the mouth of Rainy River was sixty-seven degrees at half-past eleven A.M. Yet five miles from land it was found to be seventy-six degrees, six inches below the surface; an hour afterwards repeated, and careful observations showed the

temperature to be seventy-seven and a half degrees. At one P.M., the temperature two feet below the surface was seventy-one degrees, and at the surface seventy-eight degrees. The depth of water was here thirty-six feet, and the green conferræ uniformly abundant, so that it was impossible to obtain a table spoonful of liquid free from their minute forms. The presence of this "weed," as the voyageur termed it, was the probable cause of the unusual temperature of the lake.

Fishing Ground, 120 feet deep.—Ice five feet thick forms on Lake of the Woods.

After passing the south point of Keating Island we steered for Garden Island, distant from us about nine miles. On the west side of Keating Island the Indian guide pointed out one of their fishing grounds, where he stated the water was thirty fathoms deep, and illustrated the manner in which he arrived at that estimate of the depth by explaining, through the interpreter, the mode of fishing during the winter months, the length of a fathom, and the number of these in the lines his people employed to reach with their nets the feeding grounds at that period of the year. He also described the thickness of the ice through which they had to break before they arrived at the water as sometimes exceeding five feet.

Garden Island.—Indian Corn cultivated in hills.

Garden Island is about a mile and a half long and a mile broad at its widest part. Its western half is thickly wooded, the greater portion of the eastern half cleared and cultivated. A field containing about five acres was planted with Indian corn, then nearly ripe. The corn was cultivated in hills, and kept very free from weeds. Near the centre of the field were several graves, with neatly constructed birch bark coverings. Only one lodge was seen on the island, and that was placed about 100 yards from the graves.

Shoal Lake, and the Muskeg or Marsh on the Height of Land between Red River and the Lake of the Woods.

From Garden Island to the north-west corner of the lakes is about twenty miles, but the westerly limits of navigation are not yet found here. It is possible to proceed without difficulty some miles further on, in a due west direction, into a small lake called Shoal Lake. Although no facts derived from personal observations can be here adduced respecting the general feature of Shoal Lake, yet the importance which it derives from its position requires special mention to be made of it. From our Indian guide, permitted to take us to Rat Portage by the chiefs, I learned that Shoal Lake is a reedy expanse of water, eight or ten miles long, connected with the Lake of the Woods by a navigable channel. The north side and west end of Shoal Lake were represented to be blended with a vast marsh or muskeg which stretches from near Rat Portage to far south of the Lake of the Woods, and is the source of numerous rivers which flow from it both eastward and westward. It is this great muskeg or marsh which forms the barrier between Lake of the Woods and Red River Valley, and a separate notice of it will be found further on.

Approximate Distance of Shoal Lake from Fort Garry.

On part of the south shore of Shoal Lake, and all along that part of the coast of the Lake of the Woods, there is considerable area of dry land timbered with spruce and small pine. Shoal Lake is only about eighty-seven miles in a direct line from Fort Garry, while by the very dangerous and circuitous Winipeg route it is at least 320 miles. Shoal Lake is in latitude 49° 23′, and the same meridian line cuts Red River at a spot twenty-five miles north of the boundary line and —— distant from it. The importance of the north-west corner of the Lake of the Woods, and possibly also of Shoal Lake at the terminus of a communication by land with Red River, cannot fail to be duly appreciated.

Island Scenery of the North-west part of the Lake of the Woods.—Good Timber in the Islands.

From near the north-west corner of the lake the route we pursued lay through a labyrinth of islands in a north-east by north direction for a distance of twenty-eight miles. Six miles more nearly due north through scenery of the same description, but of bolder character, brought us so Rat Portage, on one of the numerous mouths of the rocky Winipeg. Much good pine timber was seen on the larger islands near the northern part of the Lake of the Woods, and if conclusions may be drawn from the accounts which the Indians gave us of their gardens, it is very probable that extensive areas of excellent land exist on the great promontory and on some of the large islands. They spoke of growing Indian corn to a far greater extent than seen by us on Garden Island.

Channels of the Winipeg.—Numerous Windings of the Winipeg.

Issuing from the Lake of the Woods through several gaps in the northern rim of the lake, the River Winipeg flows through numerous tortuous and distinct channels for many miles of its course in a general north-east direction. Some of the channels unite with the main stream from ten to fifteen miles below Rat Portage, and one pursues nearly a straight course for a distance of sixty-five miles and joins the Winipeg below the Barrière Falls. The windings of this immense river are so abrupt and opposite that an enumeration of the successive general directions may not be without interest.

From Rat Portage it flows :—

6	miles	north-west.	8	miles	a few degrees north of west.
4	„	a few degrees to the east of north.	21	„	south-west by south.
24	„	north-west.	12	„	a few degrees south of west.
8	„	south-west.	22	„	miles due north.
24	„	north-west.	26	„	north-west.

Magnificence of the Cascades on the Winipeg.

In its course of 163 miles it descends by a succession of magnificent cataracts 349 feet. Some of the falls and rapids present the wildest and most picturesque scenery, displaying every variety of tumultuous cascades and foaming rapids, with treacherous eddies whitened with foam, and huge swelling waves rising massive and green over hidden rocks.

Character of the River.—Rat Portage.—Short Indian Route.

The river frequently expands into large deep lakes, full of islands, bounded by precipitous cliffs or rounded hills of granite. The fort in the occupation of the Honourable Hudson's Bay Company at Rat Portage is very prettily situated at one outlet of the Lake of the Woods. It is surrounded with hills about 200 feet high, and near the fort some white and red pine are standing amidst a lavigorous second growth. The rock about Rat Portage is chloritic slate, which soon gives place to granite, so that no area capable of cultivation was seen until we arrived at Islington Mission. We did not pursue the usual canoe route, but in the hope of overtaking the other members of the expedition, followed an Indian route for some miles, which was said by our guide to be half a day's journey shorter than that by the Great Winipeg.

View from a Hill on the Winipeg.—Character of the Country about the Upper Winipeg.

At our first camp after leaving Rat Portage, I ascended a hill about 250 feet high, and obtained from its summit a very extensive view of the surrounding country. The broad river, with its numerous deep bays, was seen stretching far to the north, and all around dome-shaped hills, similar to the one on which I stood, showed their bare and scantily-wooded summits in every direction; generally, they seemed to be thickly covered with small stunted pine, but in the hollows or valleys between them pine and spruce of large dimensions, with fair-sized aspens and birch, flourished abundantly. The pine on the granite hill on which I stood grew in little hollows or in crevices of the rock. The general surface was either bare and so smooth and polished as to make walking dangerous, or else thickly covered with cariboo moss and tripe de roche. The aspect of the country was similar in its outline to the region about Mille Lacs, but the vegetation could not be brought into comparison with it. Until we arrived at Islington Mission the general features of the country maintained an appearance of hopeless sterility and inhospitable seclusion.

Islington Mission.—Cultivation of Wheat on the Winipeg.—Cultivable Area on the Winipeg.

Islington Mission, or the White Dog, or Chien Blanc, for by these names it is known to the voyageurs, occupies an area of what seems to be drift clay extending over 250 acres, surrounded by granite hills. The soil of this small oasis is very fertile, and all kinds of farm and garden crops succeed well. Wheat sown on the 20th May was reaped 26th August in general; it requires but ninety-three days to mature. Potatoes have never been attacked by spring or fall frosts (five years); Indian corn ripens well; spring opens and vegetation commences about the 10th of May, and winter sets in generally about the 1st November. These facts are noticed in connection with the small cultivable area at Islington Mission on account of the occurrence of other available areas, varying from fifty to 300 acres in extent, between the Mission and Silver Falls, about eighteen miles from the mouth of the river. From Silver Falls to where the river flows into Lake Winipeg, poor and rocky land is the exception, alluvial and fertile tracts, bearing groves of heavy aspens and other trees, prevailing.

Wild Rice Grounds on the Winipeg.—Game congregate among the Rice Fields.

Below James's Falls the poles of wigwams are numerous, and many Indians were seen at the foot of the different rapids engaged in fishing. The scarcity of animal life of all kinds was very remarkable. Eagles and fish hawks, ducks and rabbits, being the only representatives seen. This scarcity is, however, confined to the autumnal months as to the time, and to the Great Winipeg River in respect of area. Some distance from the river there are extensive rice grounds (Zizania aquatica), covering many thousand acres, and continuing for many miles on either bank. Here the game congregates, and revelling in the midst of such an abundant supply of nutritious food; vast flocks of ducks, geese, and all kinds of aquatic birds common in the regions are to be found. The Indians, too, assemble at stated periods and visit the rice grounds, procuring without any difficulty, in favourable seasons, a large supply for winter consumption.

The Penawa River.—Birds in the Rice Grounds of the Penawa.

Instead of following the course of the Great Winipeg after arriving at the Otter Falls, I passed down the Penawa River into Bonnet Lake, thus avoiding the dangerous "Seven Portages," and saving several miles of route. Near the entrance of the Penawa into Bonnet Lake, the little river winds through an immense marshy area covered with wild rice, and I succeeded in collecting a considerable quantity as the Indians paddled through it with undiminished speed. There, too, were seen vast numbers of different species of duck, and many other kinds of birds, such as herons, pigeons, woodpeckers, cedar birds, jays, &c.

Section VI.

LAKE WINIPEG AND RED RIVER TO THE INDIAN SETTLEMENT.

Lake Winipeg: its length, breadth, and area.—Lake Manitoba and Winnepagoose.—The Canoe Route.—Mouth of Red River.—Importance of Lake Winipeg.—Agriculture at the mouth of the Winipeg River.—Ancient beach of Lake Winipeg; Boulders on the Cliffs; Virginian Creeper; vast number of wild fowl.—Bar at the mouth of Red River, Netly Creek.—Fertile character of the country about the Indian Missionary Village; Contrast between the Indian Settlers at the Mission and the Savage Tribes of the Lower Winipeg.

The Length, Breadth, and Area.—Tributaries received by Lake Winipeg.

Lake Winipeg is 264 miles long, by an average of thirty-five wide. It certainly contains an area exceeding 9,000 square miles, and is probably one-half as large again as Lake Ontario. Connected with Lake Winipeg by navigable channels are two other large bodies of water, Lakes Manitoba and Winipigoos, being together nearly as long as Lake Winipeg, and having about half its breadth.

The Canoe Route through Lake Winipeg.—Mouths of River.—Hayfields at the Mouth of the River.

A glance at the map will show that the canoe route merely touches or approaches the south-east coast of Lake Winipeg in the traverses to the mouth of Red River. From the imperfect observations possible to be made under such circumstances, little or nothing can be said of the character of that small portion of the coast which is seen from the canoe route. The mouths of Red River are four in number, and find their connection with Lake Winipeg through an immense area of rushes and willows, growing upon land at or below the level of the water of the lake. It is not until a point six or seven miles from the lake is reached that land, properly so called, is found. Here, during the summer months, large quantities of hay are made by the people of Red River, which is taken away during the winter; spring freshets laying the whole of this tract under water.

Importance of Lake Winipeg.—Drains a Valley 400,000 square miles in area, and easily accessible.

Lake Winipeg once reached, communication with the interior becomes an easy matter. The numerous rivers which unwater the valley of this great lake, with an area of 400,000 square miles, are most of them canoe or boat routes for many hundred miles up their streams. Lake Winipeg is very shallow at its southern extremity, and the marshy shores past which the canoe route to Red River runs abound with fresh water shells, and are the haunts of innumerable aquatic birds, among which are seen many species of duck, two species of geese, pelicans, cranes, bitterns, and plover.

Agriculture at the Mouth of the Winipeg.—Ancient Beach of Lake Winipeg.—Cliff Boulders of gigantic Dimensions.—Virginian Creeper.—Vast number of Wild Fowl.

Fort Alexander is situated within one mile and three-fourths of the lake at the mouth of the Winipeg, and here I saw wheat in process of being harvested on 3rd of September, and obtained some new potatoes of great size and excellent quality; and I was informed by the gentleman in charge of the Fort that Indian corn succeeded well in many parts of the south-eastern rim of the lake, and that it was very rarely touched by late spring frosts; it is cultivated by the Indians. The west shore of Traverse Bay is high, and shows an excellent soil thickly covered with balsam, poplar, aspens, and birch. The lodges of Indians are very numerous, as it forms one of their most important fishing grounds. The temperature of the Winipeg at its mouth was 66°·5 at six P.M., and that of Traverse Bay at six A.M. on the following day, 64°·5. An optical phenomenon of singular beauty was observed in making the Grand Traverse, nearly due south to the mouth of the Red River. This will be described in its proper place. When we landed to breakfast or dine, opportunities were afforded of examining the precipitous but unstable cliffs which were occasionally exposed. At a point on the east coast of the Grand Traverse, Section No. , was sketched and roughly measured. It shows one feature of interest, which is common to all the great lakes of the St. Lawrence basin. The summit of the cliff, clothed with an inch or two of sandy loam, shows an ancient lake beach, composed of water-worn boulders, pebbles, and stratified sand two feet thick. This is underlaid by sixteen feet of stratified sand, containing limestone fragments and primitive boulders, and flanked by a talus of shingle and boulders, among which bright yellow, cream-coloured, and beautifully variegated limestone slabs are numerous. This talus is the present shore of the lake, and the shingle slabs and boulders have probably been washed out of the unstable cliff. Its breadth may reach sixty feet, and the inclination three to five feet from the level of the lake, giving to the ancient beach, at the summit, an elevation of twenty-one feet above the present level of the waters of the lake. About five miles further south I ascended a cliff fifty feet high, consisting of stratified sand and marl, in which were embedded primitive boulders of most gigantic dimensions, some of them measured twelve to fifteen feet through; they were all water-worn, and distributed throughout the cliff. On the surface walking was exceedingly difficult, on account of their numbers and size. Many of them were covered with the Virginian creeper (ampetopsis quinquefolia). The base of the cliff was well protected by an immense accumulation of these erratics, which had fallen from the loose sand of the cliff. The temperature of the lake six miles beyond this point was 64°·5. A heavy squall from the north-west compelled us to approach the shore when within three miles of the mouth of the Red River. The waves rose with great rapidity, as usual in large, open, shallow sheets of water, and compelled a hasty retreat among the willows and rushes, where, notwithstanding that we were exposed to the discomfort of the waves washing over our camp during the night, we were compelled to remain in this damp maze of reeds until the winds and waves subsided. There I had an opportunity of observing the vast number of duck, geese, and plover which congregated amongst the rushes during the night. In the morning, flights swept backwards and forwards close to our camp in constant succession.

Bar at the Mouth of the Red River.—Netley Creek.

Red River enters Lake Winipeg by four distinct channels. Its junction with the lake by the channel through which we entered is marked by a bar, in which there is not more than three feet water close to a pit of sand, which was the only piece of land seen amidst the tall reeds extending far to the south, and beyond the point where the river channel unites some three miles from the mouth of the main channel. Land which is dry during the summer-months and at the stage of water in the river on the 5th of September, about two and a half to four feet above its level, begins five miles from the mouth of the main channel. Half a mile above this point Netley Creek comes in from the west, and by means of this small affluent much of the water during floods from the upper country reaches Lake Winipeg. Large numbers of hay stacks were seen here in September last. An immense area flooded during the spring, producing a very rank profusion of those grasses which delight in a rich marshy soil.

Fertile Character of the Country above and a little below the Indian Village.—Contrast between Settlers at the Indian Village and Savage Tribes in the Lower Winipeg.

A little below the Indian village, fourteen miles from the mouth of the river, the whole country rises; the banks are about twenty feet high, the timber imposing, and in considerable variety, and all the aspects of a level fertile country gradually come into view. The sameness in the general aspect of the banks at this season of the year becomes monotonous after the

wild and varying beauties of the Winipeg. But the sight of clearings, and the neat white houses of settlers at the Indian missionary village speedily creates another feeling, aroused by such fair comparisons between the humanizing influence of civilization and the degraded brutal condition of a barbarous heathen race, which quickly follow one another in passing from the cascades and rapids of the Winipeg, with half-clad savages fishing at the foot, to the even flow of Red River, with Christian men and women, once heathen and wild, living in security on its banks.

TEMPERATURE of the Lakes and Rivers, from the Height of Land to Lake Winipeg.

Name of Lake or River.	Temperature of Lake or River	Day.	Hour.
Mille Lacs	69·5	August 13	4½ P.M.
,, ...	66·0	,, 14	5·20 A.M.
Baril Lake	67·0	,, 14	2½ P.M.
Brulé Lake	68·0	,, 15	,,
French Portage Lake	67·5	,, 16	5 A.M.
Sturgeon Lake	68·5	,, 16	5 P.M.
,, River	67·5	,, 17	9½ A.M.
Wamakan Lake	67·5	,, 18	,,
Rainy Lake	65·5	,, 19	6 A.M.
,, ...	70·5	,, 19	1 P.M.
,, ...	66·0	,, 19	5 P.M.
Rainy River	66·0	,, 23	6 A.M.
,, ...	66·5	,, 23	6 P.M.
Lake of the Woods	67·0	,, 24	10 A.M.
6 inches below surface	76·0	,, 24	11½ A.M.
,, ,, ...	77·5	,, 24	12½ P.M.
,, ,, ...	78·0	,, 24	1 P.M.
2 feet below surface	71·0	,, 24	1 P.M.
6 inches below surface	75·5	,, 24	3 P.M.
,, ,, ...	66·5	,, 27	5 P.M.
,, ,, ...	65·0	,, 28	6 A.M.
Winipeg River	67·0	,, 31	6 P.M.
,, ,, ...	67·0	September 1	6 P.M.
Pennawa River	70·5	,, 3	1 P.M.
Mouth of Winipeg River	66·5	,, 3	7 P.M.
Lake Winipeg—			
Traverse Bay	64·5	,, 4	,,
10 miles from land..	64·5	,, 4	,,
Red River, 200 yards from mouth, after a heavy gale from north	59·0	,, 5	7 A.M.
Temperature of wind at Scratching River ..	75·0	,, 23	5 P.M.

SECTION VII.

RED RIVER FROM THE INDIAN MISSIONARY VILLAGE TO FORTY-NINTH PARALLEL.

Sugar Point.—Limestone Exposures.—Limestone exposed.

Three miles below the Honourable Hudson Bay Company's Lower or Stone Fort, and at about four from the Indian Missionary Village, a remarkable bend in the course of the stream gives rise to a sharp projection of the level plateau of the prairie. Sugar Point, as it is termed from the groves of maple which cover it, is probably preserved from the abraiding action of the stream by numerous fragments of limestone which lie at the bottom of the river bank, and continually increase in number and size in its ascending course, as far as the exposed strata of limestone, at and above the lower fort, where their place is supplied in part by exposures of the parent rock.

Maple.—Banks of the River.

The maple, which at one time grew in considerable quantities near Sugar Point, is not the true sugar maple (acer saccharinum) so common in Western Canada, but another species, also furnishing an abundance of juice from which sugar is made as far north as the Saskatchewan. It is the ash-leaved maple (negundo flaxinifolium). The common sugar maple is, however, found in the valley of Red River north of the forty-ninth parallel. Near to Sugar Point is an Indian school, in connexion with the Indian Mission below, situated north of the line which divides the parish of St. Peter from that of St. Andrew, and marking the northern limits of the Red River Settlement. The banks on both sides are very heavily timbered close to the river; and between this point and the Stone or Lower Fort of the settlement there are very few farmhouses. The general direction of the river from Sugar Point to Fort Garry is a few degrees to the west of south. In an air line the distance is twenty miles; by the road on the

left or west bank, twenty-one; and by the river itself, twenty-three miles and a half. The scenery and objects which meet the eye in ascending the river between the Lower Fort and the forty-ninth parallel are uniform, but singular and interesting.

Physical Features of Red River.—Grand Rapids.—Bars of Mud, holding Boulders and Shells.—Forest Timber.—Character of the River Banks.—Extent and Richness of the Prairie.

First, with reference to physical features, it is merely necessary to imagine a river from 200 to 350 feet broad, with a moderately rapid current, having in the course of ages excavated a winding trench or cut to the depth of from thirty to forty feet, in tenacious clay, through a nearly level country for a distance exceeding 100 miles, and the general physical aspect of Red River within British territory is reproduced. Here and there local diversities occur, which give some appearance of variety. Such are noticed at the Grand Rapids, where the even flow is broken and disturbed by a ledge of limestone, which may occasion a fall of four feet within a mile. A lower plateau has here and there been excavated perhaps ten feet below the general level of the prairie banks. An instance of this kind occurs at Dr. Burn's house, and the section marked No. 1 shows the relation of the river to the lower plateau and the Great Prairie or Rain Plateau above it. Occasionally sand, mud, and gravel bars are formed at numerous sharp turns in the general course of the stream, similar to those which may be observed upon the chart at Point Douglas, also above Fort Garry, near La Rivière Sal, near Scratching Creek, &c. These projecting bars or points are often covered with fragments of limestone, primitive boulders, and vast numbers of large fresh-water shells. The current round them is rapid, and they present a formidable obstacle to the navigation of the river by means of steamers exceeding 100 to 120 feet in length. Often, too, on one side or the other, and sometimes on both sides, a narrow belt of heavy forest timber closes upon the river, and seems suddenly to narrow and darken its abrupt windings. The most uniform character, however, and one which is more frequently found on the west side, is a clean and steep line of bank about thirty feet in altitude, perfectly level to the eye, and forming the boundary of a vast ocean of prairie, whose horizon or intermediate surface is rarely broken by small islands of poplar or willow, and whose long, rank, and luxuriant grasses, show everywhere a uniform distribution, and indicate the character of the soil they cover so profusely. A subsequent closer inspection of the soil never failed to establish its fertility and abundance, as well as its distribution over areas as far as the eye can reach, both eastward and westward, on the banks of this remarkable river.

Aspect of River between the Indian Village and Forty-ninth Parallel.—Timber on Banks.—Limestone at the Stone Fort.—Whirlpool Point.—Limestone seen in massive Layers above Big Eddy.—Application of the Limestone to Building Purposes.—Houses seen on the Banks of Grand Rapids.—Stone Church.—Mill Creek.—Swamp sustained by the Dam across Mill Creek.—A large Area, probably exceeding 20,000 acres, never flooded at Red River.

The objects which arrest attention in ascending the river between Sugar Point and the Lower or Stone Fort, are limited to precipitous clay banks, fringed with elm, poplar, maple, oak and ash, all of large growth, but not fair representatives of the forest which once occupied its banks, having been subjected to a culling process for twenty years to supply the necessities of the settlement above. Among the underbrush the Virginian creeper and occasionally a wild grape, with a profusion of convolvulus twining round hazel, and rose bushes are most conspicuous. At the Stone Fort, massive layers of limestone crop out, which have been extensively quarried, and their application is seen in the walls and bastions of the fort built upon the bank here, about forty feet in altitude, and forming the abrupt termination of the prairie stretching westward, which for some distance sustains a small but dense growth of aspens. At each turn of the river above this point the houses of the inhabitants of Red River settlement come in sight, and these occupy at short intervals the river bank all the way up to Fort Garry, a distance of twenty-three miles and a half by the windings of the river. When nearly two miles above the Stone Fort, we arrive at Whirlpool Point, and immediately above this at the Big Eddy; these are obstacles to further progress, formidable only in name, and like most other local descriptive titles on this river must be accepted with the mildest interpretation, and only understood to designate marked differences from the general even flow of the waters of the river; a small brook on which a water mill is situated enters the river at the Big Eddy. A short distance above the same locality (the Big Eddy) limestone is seen in heavy layers on the west bank, and detached fragments in great abundance protect the base of the cliff, which in no instance, observed from the mouth to the forty-ninth parallel, rises above forty feet from the water level. Some very substantial illustrations of the adaptation of the limestone for building purposes occur here, and particularly at the Grand Rapids, two miles and

a quarter farther up. The east side of the river is wooded to a depth varying from a few yards to a mile, and generally this feature prevails along the eastern bank to Fort Garry; the timber is similar to that already described. At the Grand Rapids, which even during the low stage of water in September, offer no formidable obstacle to the Company's and freighters' boats carrying four and five tons, an assemblage of well-built stone buildings are grouped, which create a very favourable impression of Red River resources and comfort, not unfrequently repeated as we ascend the stream. There we find a very substantial stone church, capable of seating 500 people, and surrounded with a neat stone wall enclosing an extensive burying ground. About 300 yards south of the church, the parsonage house is seen from the river; adjoining the parsonage is the residence of the curate, and next to that a capacious and well-built school-house, of wood. Four miles above the Grand Rapids, Mill Creek enters the river, having cut its way through the yielding clay substratum of the prairie, to a depth of 25 feet, half a mile from its mouth. Here the water mill is situated which gives a name to this creek, but which is fed to a great extent by a large but shallow marshy tract called the Big Swamp, occupying some thousand acres as indicated on the chart; as will be shown hereafter, it is mainly sustained by the mill dam holding up its waters, and thus preventing them from draining into the river. Mill Creek and its westerly extension into the swamp, form a very important physical feature in the topography of this region; the slight depression in which it flows, continued through the swamp to Mill Creek, forms the passage of water, during floods, from Red River to Lake Winipeg, whenever the waters accumulate so as to overflow their banks. From this feature, it results that the whole country north of the line drawn on the chart is dry during the highest floods, and affords an area which probably exceeds 20,000 acres, not liable to the destructive but fortunately rare inundations which have occurred since settlements were first formed here. For two miles and a half above Mill Creek, the river banks break off abruptly from the prairie level, and, on the east side, are well wooded. The houses of the inhabitants occur at regular intervals upon the immediate banks.

Houses and Windmills.—The Assiniboine.—Meanderings of Red River.—End of Settlement on Red River within British Territory.

Above Dr. Burns' house the course of the river is gently winding between the high prairie banks, which generally maintain an altitude of about thirty feet; houses and windmills occur at regular intervals, until the steeple of St. John's Church and the peaked roof of St. John's College, the school-house, the Bishop's residence, &c., offer the appearance of a large village, which is again reproduced after the sharp turn at Point Douglas, by the imposing Roman Catholic Church, dedicated to St. Boniface, the spacious nunnery and the parish school, with other buildings on the left, and a group of several commodious private dwelling-houses just below Fort Garry on the right. About half way between these small centres of population, as they may be termed, Point Douglas occurs, and on the east bank of the river, German Creek, a small meandering stream comes in from the south. A quarter of a mile above the Roman Catholic Church, the Assiniboine enters Red River, and a short distance up this stream the summits of Fort Garry come into view. Above the mouth of the Assiniboine the course of the river is exceedingly tortuous. An idea of its meandering may be obtained from the comparison between the river distance from Fort Garry to the mouth of La Rivière Sal, or Stinking Creek, and the relative position of the same places by the road; the former being sixteen and the latter nine miles. The next houses of settlers appear at intervals on the banks for several miles above La Rivière Sal, the last house being situated thirteen miles from Fort Garry, or fifty-seven from the forty-ninth parallel. Above this the river windings are fringed with forest, varying in depth from a few yards to half a mile. Here and there naked bends are exposed to the prairie. The peninsula portion on the opposite side is generally clothed with trees of large dimensions, and this character is preserved far south of the forty-ninth parallel.

THE WEST BANK OF RED RIVER, FROM THE INDIAN SETTLEMENT TO THE FORTY-NINTH PARALLEL, A DISTANCE OF 100 MILES BY THE ROAD.

From that portion of the Indian village which lies on the west bank of the river to the Lower or Stone Fort, little can be seen of the surrounding country, as the road traverses a forest of small aspens, and the farms are few in number and small in extent.

The King's Road.—Aspen Woods.—Scene south of Water Mill Creek.—Woods of the Assiniboine.—Rural Beauty of the Scenery.

The Lower or Stone Fort covers an area of about four acres, and encloses within its walls numerous buildings, which will be described in another portion of this report. The main, or King's Road, does not follow the windings of the river, but stretches from point to point,

sometimes approaching it at these places within a quarter or half a mile. Where the river windings throw it back to a distance exceeding a mile, inner roads, as they are termed, branch off to the river banks for the convenience of settlers; and there is a bridle-path all the way from the Lower to the Upper Fort, on the immediate bank of the river. Aspen woods continue to shut out the view until we arrive within a mile or two of Water Mill Creek, when a scene opens upon the right, which discloses on the one hand the white houses and cottages of the inhabitants, with their barns, haystacks, and cattle yards grouped at short distances from one another, and stretching away in a thin vanishing line to the south; while on the other hand a boundless, treeless ocean of grass, seemingly a perfect level, meets the horizon on the west. The same kind of scenery, varied only, on the left hand, as the road approaches or recedes from the farmhouses on the river banks, or passes near the neat and substantial churches, which at almost regular distances intervene, prevails without interruption until within 4 or 5 miles of Fort Garry. Here stretching away, until lost in the western horizon, the belts of wood on the banks of the Assiniboine rise above the general level, while from the Assiniboine towards the north again is an uninterrupted expanse of long waving prairie grass, dotted with herds of cattle, and in the fall of the year with immense stacks of hay. This is the ordinary aspect of the country comprising that portion of the Red River Settlement which lies between Mill Creek and Fort Garry. Remove the farmhouses and churches, replacing them on the river banks by forest trees of the largest growth, and the country between Fort Garry and the forty-ninth parallel, as seen along the road to Pembina, a distance of 70 miles, is continually reproduced in its ordinary aspect of sameness, immensity, and unclaimed endowments.

DISTRICT BETWEEN RED RIVER AND THE LAKE OF THE WOODS.

Considering that one of the objects of this exploration should be that of seeing where a summer road could be most easily made from Red River to the Lake of the Woods; that being now a subject of great interest among the settlers, who were about sending a party out for that special purpose. I thought it advisable first to go along the straight picket line made by Mr. Dawson last winter—in which direction, I understood, he reports that a road can be made for some miles—in order that I might be able to institute a comparison between this and any other portion of the adjacent country through which the Indian might guide me.

The first day I was able only to go about fourteen miles, two-thirds of this distance at least being through marsh and wet prairie. My general course was along the picket line, from which I was obliged to diverge frequently, sometimes a mile or more, but always keeping it in view, in order to avoid, when possible, the wide and many marshes through which it passes. The next day, I continued in the same direction, and having reached a point opposite the twenty-second mile post on the picket line, I could go no further, being stopped by a swamp or quagmire, impassable for horses or even men, extending in front for many miles, and on both sides as far as the eye could reach. Though taking advantage of all the dry places within reach, ten miles of the course I took lay through marsh and wet land, and five miles at least through swamp. There are a few small clumps of young aspens along the line, and low willows in some of the marshes; but far away towards the north may be seen some clumps of larger trees.

The land is for the most part a rich loam with a sub-soil of sandy clay, but the difficulty, or rather the impossibility of draining the numerous swamps and marshes, and the want of timber, renders this tract of country unfit for settlement; and for the same reasons, the difficulty of constructing a suitable road through it would be very considerable and the expenses enormous.

Leaving Rainy River, the route originally proposed traverses the Lake of the Woods and Lac Platte, connected with it, to its western extremity, a distance of eighty-four miles, forming, with Rainy River, an unbroken reach of navigation a hundred and fifty-eight and a half miles in length. From the west end of Lac Platte the distance to the Red River at Fort Garry, by the exploring line measured, is ninety-one and a half miles.

But on further examination it was found that the best site for a road was to be had by leaving the Lake of the Woods at the extremity of its north-west arm, a long inlet extending south of Lac Platte. By doing so, the route over the Lake of the Woods is reduced to fifty miles, and the land route from it to Fort Garry is nearly a hundred miles in length. This land route was traversed on horse-back, and is an exceedingly favourable site for a railroad.

This section of country presents to the eye, in its general character, the appearance of an undeviating flat. From the Lake of the Woods, for a distance of twenty-five or thirty miles westward, swamps of great extent, covered with moss and stunted evergreens, are of frequent occurrence. In other sections, considerable areas are occupied by marshes or shallow lakes, with bulrushes and other aquatic plants standing out of the water. In the latter cases, the bottom, after a certain depth is attained, is generally firm, while, in the swamps, in some

instances, the surface covering is itself afloat, and heaves and undulates beneath the feet, presenting a quagmire or peat bog, on an extensive scale. This description applies more particularly to the section nearest to the Lake of the Woods. On approaching the prairie, the swamps are less extensive and the ground in general more favourable. In the swampy sections, however, there are some areas of good soil and dry ground, and, where the bogs are deepest, they are intersected by low gravelly ridges which rise but a few feet over the general level. These ridges are firm, and their direction can be traced by the heavy growth of wood which they carry. Flat and level as the country appears to be, it is susceptible of being drained. The section most swampy, although but slightly higher than the Lake of the Woods, is at an elevation of over 300 feet above the valley of the Red River, and whenever a run of water is met with, except in the lake-like swamps, it is seen gliding on with a speed which indicates a sufficient fall for drainage.

From Fort Garry to the north-west angle of the Lake of the Woods, a road line has been laid out, and its practicability proved by the fact that, for several years, it was used as a post road and the mails carried over it on horseback. Wheeled vehicles, except in very wet weather, can already travel over the prairie, and, taking the line altogether, its average cost, to form a first-class country road, will be rather under than over the general average of such works.

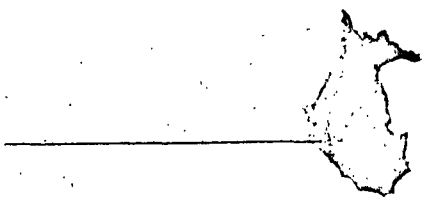
Current River route to Great Dog Lake.

The valley of Current River forms the winter route of the Indians from Thunder Bay to Great Dog Lake, and while the Great Dog Portage, by the circuitous route of the Kaministiquia, is not less than forty-three miles from Fort William, Great Dog Lake is reached by the valley of Current River in an eighteen or twenty miles march from Thunder Bay.*

Commencing at a place called the depôt on Thunder Bay, about three miles to the eastward of the mouth of the Kaministiquia, the first part of this route is the Dog Portage Road, leading north-westward twenty-five miles to the foot of Dog Lake. This road was projected in the field by the Canadian Exploring Expedition. It is to be a thoroughly-made turnpike road, well crowned and graded; six miles of it have been made this last season; and in further pursuance of Mr. Dawson's original project of improvement, material has been prepared for the building of a dam at the outlet of Dog Lake. This dam, by raising the lake, will gorge Dog River, that feeds it so as to give a navigable reach of about thirty miles to Jourdain's Rapids. The elevation of Jourdain's Rapids above Lake Superior is 720 feet.

The Kaministiquia itself has been strongly recommended as a harbour, but, in its present state, it is inaccessible to vessels drawing more than five feet and a-half of water, on account of a bar or shoal of great extent at its mouth. Its adoption would involve the dredging of a channel, and the construction of extensive piers or walls of heavy crib work, on either side thereof, to prevent it from being filled up by the action of the ice, which, at certain seasons, ploughs over the bar. Another consideration, which should not be lost sight of, that the causes which produced the shoal are still in operation. Quantities of sediment are brought down with every freshet, more especially in the spring, and the dredging would have to be repeated at intervals to keep the channel, once formed, open.

* The road from Thunder Bay to Dog Lake is believed to have been completed.



PART II.

THE RED RIVER SETTLEMENT.

The Red River Settlement, of which I shall now endeavour to convey some idea, commences a short distance above Lake Winipeg, and follows the Red River for about fifty miles. At Fort Garry this stream is joined by the Assiniboine, which flows from the westward. Up this river a continuous settlement extends for twenty-five or thirty miles, and from thence there are occasional houses to the Grand Portage, which is about seventy-five miles from Fort Garry. The population, by the last census, was 7,000, but this, I believe, does not include the settlement at the Grand Portage, nor a small settlement on a stream called the Seine, which joins the Red River from the eastward. Neither does it comprehend a large number of Indians who encamp here in summer, nor a population of half-breeds, who follow the customs of their Indian ancestors, and live on the produce of the chase, without any fixed habitation, but who, nevertheless, regard Red River as their head-quarters.

The soil throughout the settlement, and far beyond it in the prairies, is a rich alluvial deposit. But the extent of land under cultivation is not great in proportion to the population; nor is to be wondered at, seeing that the settlers have no market for their surplus produce. They seem all, however, to have a great many horses and cattle, and there is scarcely a limit to the number they might keep, as hay and pasturage can be had to any extent in the prairies.

Population, Increase very slow.—Cause of this.—Foreign Element diminishing.

The total population at the settlements on Red River and the Assiniboine amounted to 6,523 in 1856, 5,291 in 1849, and 5,143 in 1843, showing an increase in the first six years of only 148, and in the last seven years of 1,232 souls. This great difference in the apparent rates of increase is one which may be easily explained by enumerating the offsets from Red River Settlement which have occurred since the periods when the census was taken. These consist of a number of families, embracing 120 persons, forming a settlement at Prairie Portage. St. Joseph's at Turtle Mountain has absorbed a very considerable number, exceeding 500 persons, and many families have left the settlement to seek a home in other localities. At the same time the population of Red River has received very few accessions from distant countries; indeed, the foreign element, as it may be termed, shows a very decided diminution in one important source of supply.

Decrease of Europeans and Canadians.—Increase in Half-breeds.—Unfavourable Effects of the Diminution of the Foreign Element.

During the seven years which elapsed between 1849 and 1856, a decrease in the numbers of Europeans or Canadians, that is, of people not born in Rupert's Land, although British subjects and originally coming from England, Scotland, Ireland, or Canada, has taken place to the extent of 102 families. The increase in native or half-breed families during the same period was 132. Between the periods of the census taken in 1843 and 1849 there was an increase in the European and Canadian element to the extent of 74 familes, and of the half-breed of 113 families. The diminution in the number of European settlers has already worked a change for the worse in the habits and customs of the half-breeds or natives. For reasons which will be enumerated further on the tendency of the native population is gradually to throw off the humanities of civilization and approach nearer to the savage wildness of Indian life. An influx of European or Canadian blood had a very good effect in arresting this tendency, which circumstances, far more than disposition, have induced and fostered.

Population according to Origin.—Increase or Decrease during Thirteen years.

According to origin the population of Red River now stands as follows:—

	Families. 1856.	Families. 1849.	Families. 1843.	Period of Comparison, 13 Years.	
Rupert's Land { Half-breeds .. .. / Natives .. .. .. }	316	684	571	Increase in half-breed families ..	245
Scotland	116	129	110	„ Scotch „ ..	6
Canada	92	161	152	Decrease of Canadian „ ..	60
England	40	46	22	Increase of English „ ..	18
Ireland	13	27	5	„ Irish „ ..	8
Switzerland	2	2	2	„ Swiss „ ..	..
Norway	1	3	..	„ Norwegian „ ..	1

Appearance of the Farms and Farmhouses.—Swamps susceptible of Drainage.

It will be gathered from what has been said that the appearance of the settlement between the Upper and Lower Fort is remarkably attractive and pleasing at the first sight. On the river bank, and extending from it to a distance of about a third of a mile, farms are laid out in narrow strips, the houses are generally close to the edge of the level table-land of the prairie, where it is abruptly cut by the channel of the river, and is thought to be high enough to protect them from occasional floods; but where the boundaries of the prairie retire from the present river channel, they are sometimes placed near the road, and rarely in the depression formed by the ancient course of the stream. Above Mill Creek there does not appear to be any rise of land sufficient to afford security against extraordinary floods, such as those of 1826 and 1852, when the waters rose above the road, or more than thirty feet above the present river level. On the west of the road, as already remarked, is a boundless prairie, here and there enclosed, and offering to the eye perfectly level fields of waving grain or luxuriant pasture. Where no enclosures west of the road have been made, the prairie often passes in what are locally termed swamps or marshes; but which are so susceptible of drainage, and conversion into the richest pasture lands, that they do not deserve the title which has been assigned to them.

Appearance of the Settlement at the first sight pleasing.—Indifference to the Future characterizes the People.

A closer acquaintance with the settlements dispel the favourable impression with which a stranger at first regards them. At a distance, the neat white-washed houses, with their gardens and farm-yards, continuing without interruption for twenty miles between the forts, the herds of cattle, horses, and sheep feeding on the plains, the vast expanse of what seems to be meadow of the richest description, lead one to suppose that universal prosperity and contentment would here be won without anxiety or trouble. Nevertheless, no one can fail to be struck with the indifference to the future, which seems habitually to characterize the people, especially the French portion of the population, and to show itself everywhere in their unfinished dwellings, neglected farms, and extravagant indulgence in dress or in articles they covet. Many of the apparent efforts of industry which, seen from a distance, excite admiration, shrink upon a nearer approach into sluggish and irregular attempts at improvement abandoned before completion. The farms and farm buildings in the occupation of the majority afford no sign of recent amelioration, and in general it may be said that the buildings, which in Canada would be considered good, roomy country houses, are exclusively possessed and occupied by the retired officers of the Hudson's Bay Company, the traders or merchants of the settlement, and the clergy.

Fort Garry in 1845.—Lieutenant Vavasour, R.E.

Fort Garry, 25 miles from the mouth of Red River, and Upper Fort Garry, 50 miles from the same, are the only posts in the Red River Settlement. The lower fort is not yet completed; it consists of a loopholed wall, three feet thick and 450 feet square, having circular towers of the same thickness, and 36 feet diameter at each angle. The loopholes are placed at intervals of 11 feet, the wall is at present only 10 feet high, and the towers about four feet; it is situated on the left bank of Red River, the banks of which at this point are high and steep, so much so that the river is not seen from the loopholed wall. The buildings in the interior are of stone; there are three stores two stories high, and one dwelling-house. The stone itself is a sandy limestone, and procured on the banks of the river, where there is a quarry. Timber is very scarce in the Settlement, and firewood is drawn and rafted from a considerable distance. Upper Fort Garry is similar to the lower fort, but of smaller dimensions, being 80 yards square, the circular towers are 18 feet diameter, and contain four small guns, two on the basement and two on the upper storey. The buildings in the interior are all of wood. The wall is 15 feet high, but not loopholed; it has a gallery to enable men to fire over it. This fort is situated on the left bank of the Assiniboine River, 350 yards from its junction with Red River, it is swift and crooked, and 35 to 40 yards in width, varying according to the period of year. Sketches of both these forts are forwarded herewith. The country round them is perfectly flat, and offers no one particular spot favourable for a commanding position.

Cultivated crops and Forest Productions.—Indian Corn.

Varieties of Indian corn exist, which may always be expected to ripen in Assiniboia.

Wheat.—Forty bushels to the Acre common on new land.

This is the staple crop of Red River; its cultivation is so general, and the good quality of the grain so well and widely known, that very little need be said on that head. In favourable years, that is in years which have not been distinguished by so wet and backward a spring for farming operations as that of the present year, wheat ripens and is ready for the sickle in three months from the day of sowing.

Hay.

Quantity unlimited, and quality excellent. The prairies for hundreds of miles, through which Red River, Assiniboine River, Rat, and Roseau Rivers flow, offer everywhere a bountiful supply of grass and hay. Hay ground privileges have been established in both of the larger rivers, and the right of making hay within particular limits is recognized by the inhabitants.

Hops.

These grow everywhere wild and with the greatest luxuriance in Assiniboia.

Peas.

Grow well, and yield abundantly.

Tobacco.

Is cultivated to a small extent, but from trial of the qualities, I infer that it is susceptible of great improvement in the manufacturing process to which it is subjected. The season is, perhaps, too short for it to acquire maturity, and produce a good article.

Potatoes.

Assiniboia is particularly distinguished for the abundance, size, and quality of its potatoes.

Turnips, Beets, &c.

All kinds of root crops grow well, and attain large dimensions. All common garden vegetables, which are cultivated in Canada, are equalled, if not surpassed, by the productions of the rich prairie soil of Assiniboia.

Sugar.

Considerable quantities of sugar are made from the ash-leaved maple on the Assiniboine. As no care is taken of the trees furnishing this useful article, it is probable that the supply from this source will soon cease. In cutting wood for fuel, the "natives" do not seem to have any special regard for the valuable trees.

Flax and Hemp.

Some years since, at the instance, it is stated, of Sir Geo. Simpson, flax and hemp were cultivated to a considerable extent by the settlers at Red River. The product was of excellent quality, and gave every promise of furnishing very valuable commodities for home manufacture, and for exportation.

Lumber.

Timber fit for lumbering purposes is only found in narrow strips on the Red and Assiniboine Rivers, and in still less quantities on the Roseau and Rat Rivers; the timber consists of elm, oak, maple, and poplar of very large growth, as is recorded elsewhere. Poplar, exceeding four feet in diameter; elm, exceeding three feet; and oak of very large dimensions, are the prevailing forest trees: but if the settlements progress, and why should they not? these supplies will soon be consumed. The ridges afford small aspen and pine; it is stated, too, that back of the great ridge on the east side of the Red River, good pine is to be found towards the Lake of the Woods; the Winipeg would doubtless furnish some good pine, but the difficulty would lie in bringing it up Red River in its unmanufactured state. Sawmills are unknown in the settlements, but the rapids of the Winipeg could afford any required power there. The question of a supply of timber for building purposes is not so important as the requirements of the same material for fuel; hence it is that those who interest themselves in

the future of Red River are anxiously turning their inquiries in the direction of the Upper Assiniboine and the Little Souris, to those beds of lignite or tertiary coal which are so often spoken of by the buffalo hunters, who have occasion to cross these rivers in their progress to the high prairies.

Live Stock.

The live stock of the settlement are represented by 2,799 horses, 2,726 oxen, 3,883 cattle, 2,644 calves, 4,674 pigs, and 2,429 sheep. Since the census of 1849 an increase has taken place in all the foregoing items, with the exception of sheep.

Red River Carts.

Produce is hauled in the celebrated Red River carts, which are admirably constructed throughout of wood; no iron is employed, but sometimes buffalo hide is made to serve as a tire; these carts will last for several years; and one which conveyed some heavy boxes of mineralogical specimens from Red River to Crow Wing last autumn had previously been twice to near the foot of the Rocky Mountains, and was still in good condition.

Land Transport.—Carts.

The land transport throughout the whole of the Red River and Saskatchewan country is performed during the summer season by light carts of home manufacture, drawn by single horses or oxen; the load drawn by the former being usually 600 lbs. for a long trip; and the latter, which is harnessed by means of a collar, something like a horse-collar put on upside down, hauls about 900 lbs. The rate of travelling with loaded carts, including stoppages, is from twenty to twenty-five miles a day, and when following a beaten trail there is usually but one man to every three carts. The animals are without shoes and live entirely on the pasture found by the way. The Red River carts, in the manufacture of which no iron is used, are certainly well adapted for the mode of travelling in use, being easily "man-handled" at creeks, bogs, or other difficult places, and being constructed entirely of wood and with little extra boarding about them, they float well and offer little resistance to the current in crossing rivers; besides which, the wheels are useful for the formation of "skows" in which to ferry over the baggage; but at the same time carts are in rough travelling very severe on the animals as every jolt of the wheels is communicated to them, and there is in addition always a weight on the backs, frequently the source of sore backs. The cost of this travelling is perhaps a little more than by water—(*Blakiston*).

Travails.

The use of "travails," both horse and dog, is general among the prairie Indians, and consists in the animal having to drag a load. Supported on two poles, the larger ends of which trail on the ground behind, while the others cross over the back and are made fast to a rough pad and breast strap.

Sleds.

In winter sleds are used; those for beaten tracks with horses or oxen being formed with runners, while those for dog travelling and single horses away from civilization are what are termed "flat sleds." The loads are about the same as for carts—(*Blakiston*).

Religious denominations in Red River.

There are three religious denominations in Assiniboia,—Church of England, Presbyterian, and Roman Catholic. In the census of 1843 and 1849 two divisions only were recognized, Protestant and Roman Catholic, and the numbers of members were stated to be 2,798 Roman Catholics and 2,345 Protestants. In 1849 the Episcopalian families were stated to number 539, and the Roman Catholic families 513. In 1856, a division in the enumeration of the Protestant element was made, probably on account of the advent of a Presbyterian minister, who responded to the call of a numerous body belonging to that denomination, yet in the absence of a minister formerly enumerated with the Episcopalians. Last year the census, according to religion, stood thus:—

Families and Churches.

Roman Catholics,	534	families,	with	3	churches.
Episcopalian,	488	„	„	4	„
Presbyterian,	60	„	„	2	„

The settlement at Prairie Portage and the Indian Missionary Village are not included in this enumeration.

Census of the Red River Settlement, taken on the 20th day of May, 1856, according to Parishes.

1856. Names of the Parishes	Total. Number of Families	Average per Parish	Ages [illegible]	Ages [illegible]	Ages [illegible]	Ages [illegible]	Ages [illegible]	Ages [illegible]	Ages [illegible]	Ages [illegible]	Ages [illegible]	Religions [illegible]	Religions [illegible]	Country [illegible]	Country [illegible]	Country [illegible]	Country [illegible]	Country [illegible]	Country [illegible]	Country [illegible]	Men [illegible]	Men [illegible]	Women [illegible]	Women [illegible]	Sons [illegible]	Sons [illegible]	Daughters [illegible]	Daughters [illegible]	Total
St. James	64	6 [illegible]	...	8	10	23	23	1	...	...	...	39	29	16	10	6	7	...	29	...	64	10	66	18	23	99	32	93	414
St. John's	61	7	...	7	10	20	15	11	9	...	...	77	4	3	2	39	6	...	31	1	77	15	76	13	51	106	67	117	567
St. Paul's	90	6 [illegible]	...	14	25	20	14	9	6	3	.	87	3	9	1	29	..	1	60	.	70	20	77	23	50	116	39	148	565
St. Andrew's, Upper	94	6 [illegible]	..	14	27	17	20	11	3	1	.	86	7	7	...	23	4	...	61	...	87	17	89	20	70	114	30	142	554
" Lower	121	5 [illegible]		26	37	21	17	11	4	2	...	120	1	7	..	16	..	...	94	..	106	29	106	36	57	143	41	135	653
St. Peter's	118	6 [illegible]	...	41	26	17	17	6	6	1	2	116	2	1	...	...	..	.	117	...	111	18	111	31	21	133	23	146	596
St. François Xavier	178	6 [illegible]	3	42	60	42	16	16	12	2	1	3	175	..	..	1	25	...	162	...	161	32	161	41	101	263	84	263	1,101
St. Charles	62	6 [illegible]	..	25	16	10	6	3	2	1	..	20	42	2		4	2	...	64	..	69	8	70	11	23	86	30	75	348
St. Norbert de la Rivière Salle	101	6 [illegible]	1	23	28	10	11	12	7	...	.	...	101	...	..	..	16	...	84	1	92	5	92	13	63	110	40	170	625
St. Boniface	163	6 [illegible]	1	45	19	29	25	19	10	6	1	5	178	..	..	1	33	..	149	...	167	31	175	19	95	271	103	274	1,218
Total, 1856	1,095	...	6	248	285	221	163	96	58	15	4	653	542	10	13	119	92	1	928	2	999	240	1,040	285	530	1,486	562	1,583	6,691
Total, 1849	1,052	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	.	873	115	877	135	362	1,314	373	1,292	5,391
Increase in 7 years	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	126	85	133	150	154	172	189	291	1,300

Census of the Red River Settlement —*continued.*

1856. Names of the Parishes	Dwellings. Houses.	Stables.	Barns.	Live Stock. Horses.	Mares.	Oxen.	Bulls.	Cows.	Calves.	Pigs.	Sheep.	Implements. Ploughs.	Harrows.	Carts.	Canoes.	Boats.	Land. Cultivated land, acres.	Machinery. Wind Mills.	Water Mills.	Threshing Mills.	Bruising Mills.	Winnowing Mills.	Carding Mills.	Public Buildings. Churches.	Schools.	Convents.	Hospitals.
St. James	70	92	31	80	92	192	9	217	219	260	16	37	35	175	22	10	Acres. 671	1	2	..	...	...	...	1	1	...	...
St. John's	93	119	57	150	187	501	13	610	783	462	832	73	98	366	47	16	1,183	7	1	2	1	1	...	2	3	...	...
St. Paul's	93	181	71	118	126	453	22	528	408	651	579	80	93	222	47	13	1,381½	3	2	1	1	.	...	1	1	...	.
St. Andrew's, Upper ...	102	128	59	39	70	272	13	311	315	502	189	57	77	116	46	10	928	1	...	...	...	...	...	1	2	...	.
Do. Lower ...	101	151	63	65	96	319	16	415	211	691	65	67	99	145	50	4	717½	2	1	2	...	1	...	...	2	...	...
St. Peter's	117	87	37	21	27	160	8	139	92	155	9	41	39	21	73	3	302	2	...	...	...	...	...	1	3	...	...
St. François Xavier... ...	97	99	25	512	257	209	22	318	122	369	9	47	49	483	63	...	582	1	...	...	...	...	...	2	1	...	..
St. Charles	49	60	14	47	65	121	16	218	118	265	56	24	30	102	26	...	375	...	1	...	...	...	...	2	...	...	...
St. Norbert de la Rivière Salle	83	96	9	104	109	119	13	227	278	413	6	19	55	156	62	...	702	...	...	...	...	...	...	...	..	...	...
St. Boniface	134	118	13	249	277	577	14	616	315	1,009	484	108	97	349	166	2	2,261	1	2	3	...	...	1	1	4	1	1
Total, 1856	933	1,191	409	1,275	1,266	3,006	146	3,679	2,781	1,929	2,245	590	672	2,108	542	...	8,866	17	9	8	2	6	1	11	18	1	1
Total, 1849	745	1,066	335	1,095	950	2,097	155	2,147	1,615	1,565	3,096	492	576	1,918	428	...	6,312½	18	1	..	...	...	...	..	.	.	..
Increase in 7 years...	188	125	74	280	316	909	...	1,532	1,169	3,364	...	98	96	190	114	...	2,414	.	8	8	2	6	1	4	...	...	.
Decrease in 7 years...	...	...	...	...	...	...	9	...	...	...	851	...	...	...	...		...	1	...	..	...	.	...	...	...	...	...

District of Assiniboine, June 4th, 1856. E. O. (Signed) Wm. R. Smith.

THE HALF-BREED HUNTERS OF RED RIVER.

Many of the Half-breeds subsiding to the condition of Indians.

These hardy and fearless children of the prairie constitute a race to which much interest may reasonably be attached. They are endowed with remarkable qualities, which they derive in great part from their Indian descent, softened and improved by the admixture of the European element. It is, however, much to be regretted that from the singular necessities of their position, many of them are fast subsiding into the primitive Indian state ; naturally improvident, and perhaps indolent, they prefer the wild life of the prairies to the tamer duties of a settled home ; this is the character of the majority, and belongs more to those of French descent than of Scotch or English origin.

Improvidence of the Half-breeds.

The improvidence of many of the French half-breeds is remarkable, and many of them can be regarded in no other light than men slowly subjecting themselves to a process of degradation by which they approach nearer and nearer to Indian habits and character, relinquishing the civilised but to them unrequited pursuit of agriculture, for the wild excitement and precarious independence of a hunter's life.

The politeness of the French half-breeds is quite delightful in these distant regions. On meeting, they shake hands and immediately raise the cap.

Power of the Half-breed Hunters. Their Independence.

The half-breed hunters, with their splendid organization when on the prairies, their matchless power of providing themselves with all necessary wants for many months together, and now since a trade with the Americans has sprung up, if they should choose, for years, their perfect knowledge of the country, and their full appreciation and enjoyment of a home in the prairie wilds, winter or summer, would render them a very formidable enemy in case of disturbance or open rebellion against constituted authorities. The half breed hunters of Red River could pass into the open prairies at a day's notice, and find themselves perfectly at home and secure, where white men, not accustomed to such a life, would soon become powerless against them, and exposed to continued peril.

The physical appearance of the half-breeds is much in their favour. They are a tall, strong, and active race of men. They are the best horsemen and marksmen in the country. If it should ever be considered expedient by Her Majesty to raise a body of irregular cavalry in this country there exists in the half-breed the most eligible material I have ever seen in any country, and I have seen the Risalus of India and the Arabs. If, on the other hand, a local infantry corps should be ever contemplated, I can confidently assert that the half-breeds would not enlist, and if they did they would never submit to the restraints of regular soldiers, but desert to St. Peter's on the first opportunity. A noble militia could be embodied, and I think would be a popular measure among the Scotch and English, who would readily enrol themselves.—(*Crofton*). Colonial Corps

Military Force.

Should there be occasion for a military force to be kept up in the interior, an efficient corps of mounted troops could be raised at Red River, which, for rapid movements and reconnoitring or outpost duty in a country where the means of subsistence for man and horse have to be drawn from the wilderness it would be particularly adapted, while it would be difficult to find a class of people more suited to this kind of service than the half-breeds. The raising of such a force, on an emergency, would be a task of very short duration, as the general fire-arms in use in the country are all of one calibre, and a large store of ammunition, including ready-made bullets, is always on hand.—(*Blakiston*).

THE CLIMATE OF THE VALLEY OF THE RED RIVER

Climate "excessive."—Early Spring and Autumn Frosts rare.—The Melon and Indian Corn excellent Recorders.

The climate of the valley of Red River exhibits the extremes of many characteristics which belong to the interior of continents in corresponding latitudes. High summer temperatures, with winter cold of extraordinary severity appear to prevail in Assiniboia, as in the interior of north-eastern Europe and Asia. It cannot fail to be noticed, however, that the general absence of late spring and early autumn frosts, with an abundant fall of rain during the agricultural months, are the distinguishing features of the climate of the valley of Red River. The melon growing in the open air, and arriving at perfect maturity in August and September, Indian corn succeeding invariably, when due precautions are used to ensure ripening before the middle of September, are strong proofs of the almost uniform absence of summer frosts.

Summer at Red River nearly 4 degrees warmer than at Toronto.—Explanation of the richness of the Prairies.

A comparison with the climate of Toronto for corresponding months of the years 1855 and 1856 reveals some very curious and interesting facts, which may possess considerable importance. Limiting our attention at present to the summer months, we find from inspection of the following table of comparison, that the summer of Red River is nearly four degrees warmer than the summer at Toronto, and with this remarkable excess of temperature we find the unexpected difference of 21·74 inches of rain in favour of Red River. These meteorological facts explain the wonderful richness of the prairie vegetation, and the vast accumulation of vegetable matter which is now found there.

Natural Division of the Seasons at Red River.

The natural division of the seasons for the climate of the Red River would appear to be as follows :—

Summer ..	... June, July, August.
Autumn ..	.. September, October.
Winter ..	.. November, December, January, February and March.
Spring ..	.. April and May.

Summer Temperature at Red River—Comparison between the Summer Temperature at Red River with Montreal, Quebec, and Toronto.

The summer temperature of Red River, and the absence of frosts during that season, determine its fitness for agricultural purposes. The following table exhibits a comparison between the summer temperature of the settlement and various other well-known places in Canada :—

Summer temperature at Red River Settlement	67·76
Montreal, Canada	66·62
Quebec	62·91
Toronto	63·98

Winter Climate.—Cold intense and of long Duration.

The prevailing characters of the winter months are long-continued intense cold, with a clear dry atmosphere. Mercury often freezes, and remains congealed for many days together. In calm weather exposure to such intense cold is not described as producing inconvenience or suffering, and when the wind is blowing the cold is rarely so intense. The half-breeds, and of course the Indians, camp out in the open plain during the whole winter, and the only protection they enjoy consists of a buffalo skin tent and an abundance of buffalo robes.

Salubrity of the Climate.—Preceding Comparisons refer to corresponding Observations.

The salubrity of the climate of Red River is indicated by the extent of professional services in the settlements. One medical man, not overburthened with work, to a population nearly reaching 7,000, may be accepted as a fair standard by which to estimate their sanitary condition.

Winds.

The prevailing winds are north and south, the former being about one-fourth and the latter one-third of the whole. Winds from the north-east and east are followed by thick weather with rain in summer and snow in winter.

Temperature.

Monthly Means.

June.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.
+69·10	+71·16	+63·03	+59·26	+42·20	+21·19	−8·31	−10·55	−1·71	+9·09	+39·83	+58·46

Annual Mean, 34·38.

Summer, 67·76; *Autumn*, 40·88; *Winter*, 6·85; *Spring*, 35·79.

Monthly Fall of Rain and Snow (1855–1856).

Rain.

January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
0·0	0·0	0·0	6·5	4·0	6·0	12·0	12·5	5·0	0·0	2·5	0·0

Total amount of fall, 48·5 inches.

Snow.

January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
5·0	6·0	6·5	3·0	2·0	0·0	0·0	0·0	0·0	2·0	7·0	8·0

Total amount of fall, 39·5 inches.

On the Progress of the Seasons and State of the Weather at Red River Colony from 1st June, 1855, to 31st May, 1856.

1855. June 5th was the coldest day in the month. Thermometer, 7 A.M., 58; 2 P.M., 63; 9 P.M., 56. The 14th was the hottest day. Thermometer, 7 A.M., 72; 2 P.M., 88; 9 P.M., 71. Three inches of rain fell on the 17th, one on the 19th, and six on the 25th.

July 2nd was the coldest. Thermometer, 7 A.M., 56 ; 2 P.M., 78 ; 9 P.M., 68 : light rain. The 25th was the hottest day. 7 A.M., 87 ; 2 P.M., 92 ; 9 P.M., 82. 7th, rain $3\frac{3}{8}$ inches. 10th, rain $\frac{3}{4}$ inches. Thunderstorm on the 17th, rain 3 inches. 26th, 1 inch rain ; 29th, 3 inches rain ; 30th, 2 inches : total, $14\frac{5}{8}$ inches. Wheat out of the ear. On the 12th, hay-cutting commenced. Tabanii and mosquitoes very numerous and troublesome.

August : Coldest day, 29th. Thermometer, 7 A.M., 44 ; 2 P.M., 68 ; 9 P.M., 56. The hottest day was the 5th. 7 A.M., 67 ; 2 P.M., 86 ; 9 P.M., 76. On the 8th, 5 inches of rain fell ; 11th, $5\frac{1}{4}$ inches fell ; 14th, 2 inches fell ; 27th, $\frac{1}{4}$ inch : total, $12\frac{1}{2}$ inches. Barley harvest commenced about the 1st : wheat harvest on the 15th. Slight frost on the 30th.

September : The coldest day was the 30th. Thermometer average + 48. The hottest day was the 5th. Thermometer, 7 A.M., 70 ; 2 P.M., 80 ; 9 P.M., 70. Total of rain during the month, $6\frac{1}{2}$ inches. Finished shearing wheat on the 8th. A few leaves falling. 26th, grey geese flying to the south.

October : The warmest day was the 1st. Thermometer, 7 A.M., 56 ; 2 P.M., 70 ; 9 P.M., 58. Some snow fell on the 4th. Taking up potatoes on the 8th. White geese flying to the south, and continued to do so up to the 20th, and a few flocks later than that ; all the larger kind of ducks leave about the same time. The decidurus trees are bare of leaves, except the oak and some of the hardier kinds.

November : The 2nd was the warmest day. Thermometer, 7 A.M., 32 ; 2 P.M., 38 ; 9 P.M., 36. Two inches and a half of rain fell on the 3rd ; five inches of snow fell on the 11th ; 12th, river covered over with ice. The coldest day of the month was the 21st. Thermometer, 7 A.M., — 12 ; 2 P.M., + 8 ; 9 P.M., + 6. Warm weather from the 21st to the end of the month. Seven inches of snow fell during the month. Flocks of snow birds have made their appearance from the north, and all the summer birds are gone,

December : The warmest day was the 6th. Thermometer, 7 A.M., + 22 ; 2 P.M., + 26 ; 9 P.M., + 30. The coldest day was the 24th ; thermometer, 7 A.M., — 48 ; 2 P.M., — 30 ; 9 P.M., — 40. We had six days of very cold weather, including the 23rd and 28th. The wind blew from the north during three days before the severe cold began ; during its continuance there was very little wind, and for two of the coldest days it was at the south. Eight inches of snow fell.

1856, January : The warmest day was the 17th. Thermometer, 7 A.M., + 10 ; 2 P.M., + 22 ; 9 P.M., + 16. The coldest was the 7th ; thermometer, 7 A.M., — 36 ; 2 P.M., — 28 ; 9 P.M., — 36. Five inches of snow fell. The average cold for this month has not been great ; very little wind.

February : Coldest day the 2nd. Thermometer, 7 A.M., — 36 ; 2 P.M., — 20 ; 9 P.M., — 34. The warmest day was the 20th ; thermometer, 7 A.M., + 26 ; 2 P.M., + 35 ; 9 P.M., + 24. Six inches of snow fell. After the 12th, spirits of wine in the glass stood, with few exceptions, above zero, and the weather has been pleasant.

March : The coldest was the 8th. Seven A.M., — 32 ; 2 P.M., — 24 ; 9 P.M., — 26. The warmest day was on the 22nd. Thermometer, 7 A.M., + 28 ; 2 P.M., + 38 ; 9 P.M., + 34. The thermometer fell during the night a few degrees below zero, but on the whole the weather was pleasant ; six inches and a half of snow fell. Much of the snow melted during the month. Barking crows made their appearance about the 20th.

April : Geese made their appearance on the 2nd, and the snow birds left us for the north. The 12th was the coldest day this month : thermometer, 7 A.M., + 16 ; 2 P.M., + 30 ; 9 P.M., + 24. Warmest day, 23rd : thermometer, 7 A.M., + 46 ; 2 P.M., + 66 ; 9 P.M., + 44. About six inches of snow and five of rain fell. On the 16th the rain began to throw off its winter coat ; clear of ice on the 20th. Sturgeon taken in the river in great numbers : the snow all away. Wild fowl to be seen in every direction on the 29th, and sowing wheat commenced.

May : The coldest day, 11th. Thermometer, 7 A.M., + 34 ; 2 P.M., + 43 ; 9 P.M., + 39. The warmest day was the 18th : 7 A.M., + 75 ; 2 P.M., + 84 ; 9 P.M., + 56. Four inches of rain fell on the 26th. On the 4th, whip-poor-will began his serenades. The wheat sown on the 29th has germinated, and given a green appearance to the field. On the 9th, wild geese abundant in the plains ; maple in leaf ; gooseberry bushes the same : finished sowing wheat on the 10th.

1856. Wheat sown in the beginning of May was in the ear on the 13th July, and ripe on the 20th August. The wheat sown on the 29th April was ripe on the 14th August. The hottest day this last summer was the 20th of July. Barley harvest commenced in July ; finished cutting wheat on the 28th August ; slight frost on the 30th of the same month ; potatoes taken up first week of October.

6th September. Flocks of grey geese flying to the south. Prenys Americana ripe and very plentiful in the first part of this month, or rather before this month. Flocks of passenger pigeons are in from the north, and leave from the 20th to the last of the month. On the night of the 7th whip-poor-will gave us his parting song. *Corugonus lucidus* enter the river

to spawn. The *corugonous albus* in Lake Winipeg commence spawning about the 10th of October, and end about the 1st November.

TABLE showing the Prices of Provisions, &c., for the Canadian Red River Exploring Expedition, Red River Settlement, 1857.

60 cwts. flour ..	at 25*s.* sterling.			Salt	10*s.* per bushel.
40 cwts. beef ..	4*d.* „	per lb.		200 lbs. lard and tallow, at	6*d.* sterling per lb.
15 bags pemican ..	6*d.* „	„		50 lbs. candles	1*s.* „ „
10 bales dried meat	4*d.* „	„		50 bushels potatoes ..	1*s.* „ „
1 keg butter ..	1*s.* „	„		50 lbs. cheese	1*s.* „ „
1½ chests tea, black and green ..	4*s.* „	„		Oak firewood	6*s.* „ per load.
8 kegs sugar ..	1*s.* 6*d.* „	„		Poplar	5*s.* „ „
				Long wood	2*s.* 6*d.* „

In 1858 guides were paid 30·00 dollars a month, bowmen and steersmen 27·50 dollars, and ordinary canoemen 22·50 dollars a month. The hire of two north canoes with 12 Indians and two French Canadians for two months was 840·00 dollars.

Red River and Lac la Pluie Indians.

TABLE showing Number of Indians.

Post.	District.	Number of Indians frequenting it.
Fort Garry	Red River ..	7,000, including Whites and Half-breeds.
Lower Fort Garry	Ditto	
White Horse Plain	Ditto	
Pembina	Ditto	1,000 ditto.
Manitoba	Ditto	200 ditto.
Reed Lake	Ditto	50
Fort Francis	Lac la Pluie ..	1,500
Fort Alexander	Ditto	300
Rat Portage	Ditto	500
White Dog	Ditto	100
Lac de Bonnet	Ditto	50
Lac de Bois Blanc	Ditto	200
Shoal Lake	Ditto	200

I would respectfully invite your attention to the necessity of coming to some understanding with the Saultaux Indians, who inhabit the country about Rainy Lake and the Lake of the Woods. These people are well-informed as to the object of our visit, and they have conceived the idea (to some extent reasonably enough) that the opening up of the communication and colonization of the country would deprive them of their hunting grounds, and, impressed with this conviction, they threaten to stop us even in carrying on the surveys and explorations, and indeed they have done so in one instance already. I do not apprehend that there would be any difficulty in making an arrangement when the objects which the Government have in view are clearly understood; but it will be requisite that full explanations be given, and such a treaty made as will prevent all opposition or collision hereafter. That it is in their power to interrupt any chain of communication that may be formed cannot be doubted, and as they have already shown themselves to be exceedingly tenacious of their right of soil, I am of opinion our only course will be to make an amicable arrangement with them by which free commercial intercourse with the Red River Settlement may be permanently secured. They raise no objection whatever to parties passing by the Winipeg or the Rainy Rivers, these, as themselves say, are open to every one, but the occupation or possession of the soil, without previous treaty or agreement, and without any view of establishing a trade with them, is what they are most decidedly opposed to.

The only localities where the Indians are at all numerous are at the Lake of the Woods and Rainy River, but the entire population does not greatly exceed 3,000. They can, however, collect in summer in larger numbers than Indians usually do, from the fact that they have abundance of food. This is afforded by the wild rice of the country which they collect, and by the fish which literally swarm in the lakes and rivers; some industry practised on their own part too in raising Indian corn serves to supply them to a small extent. I have seen as many as five or six hundred of them collected at one time at the Rapids on Rainy River, engaged in catching sturgeon, the flesh of which they preserve by drying it like Pemican, and then pounding it up and putting it, with a due mixture of oil, into bags made of sturgeon's skin.

They have a rude sort of Government, and the regulations made by their Chiefs are observed, it is said, better than laws usually are where there are no means of enforcing them.

They are very intelligent, and are extremely jealous as to their right of soil and authority over the country which they occupy. When the Red River Expedition first came in contract with them they manifested some displeasure, and were not slow to express it, at parties being sent through their country, to explore and examine it, without their consent being first asked and obtained. On becoming better acquainted with them we found it to our advantage to keep up a little friendly intercourse with the Chiefs, calling upon them as we passed and interchanging a few presents of no great value. When we had adopted this course all difficulties vanished, and ere the explorations were brought to a close they manifested and expressed an earnest wish to see the communication open.

The chief danger which could arise of coming into unfriendly relations with the Indians would be from having large parties of workmen in the vicinity of their encampments. Now, this is a contingency not likely to arise, from the fact that where the Indians are numerous the navigation is unimpeded and but little work required; but, as a rule, extreme prudence will always have to be observed by the officers in charge of men to keep them from coming in contact with the Indians—(*Dawson*).

For my own part I would have the fullest reliance as to these Indians observing a treaty and adhering most strictly to all its provisions, if, in the first place, it were concluded after full discussion, and after all its provisions were thoroughly understood by the Indians, and if, in the next, it were never infringed upon by the whites, who are the first generally to break through Indian treaties—(*Dawson*).

There is but one point more in relation to this subject to which I would invite attention; it is the necessity of adopting the most rigorous and strict measures to prevent the conveyance of ardent liquors to the Indian country. This the officer in charge of the works can easily see to if he is armed with the proper authority. There is no likelihood of any of the employés of the works taking spirits, in any quantity, with them unless contractors are employed; but there are private traders who would follow in their wake, and would not be slow to bring liquor if through it they could drive a trade for furs, and such persons should, if they made the attempt, be at once arrested—(*Dawson*).

PART III.

FROM THE REPORTS OF COLONEL CROFTON IN 1848 AND CAPTAIN BLAKISTON, R.A., IN 1858.

Boats. Description.

EACH boat is of the following construction:—Length of keel, 30 feet; over all 42 feet; which gives considerable shear equally to both stem and stern-post. Breadth of beam 9 feet, sharp at both ends, depth inside, 3 feet, and when loaded with 70 pieces (about 56 cwt.) besides the crew, oars, sail, mast, &c., draws two feet of water. It is steered by means of a long sweep passing through a ring made fast to the stern-post, except under sail, when a rudder is shipped

Capacity.

They can convey with tolerable accommodation one officer, one serjeant, and thirteen rank and file, with a native crew of six Indians, or voyageurs; the officers' personal baggage, 300 lbs., the knapsacks and bags of the soldiers, their provisions for forty days, and a few stores, in packages of 90 lbs. each. Colonel Crofton's boats carried eighteen military and six crew, but he considered the number to be inconveniently large.

How worked.

These boats are propelled by six or eight sweeps or clumsy pine-wood oars, and are steered with a sweep by one of the crew, who, as well as the pole-man in the bow, is called a "Boute." When the current is too rapid for rowing, these boats are laboriously tracked by six men, relieved after a spell of two hours by an equal number. They are provided with large lug-sail, and with an aft-wind or on the quarter can go in smooth water about six knots in the hour.

Division into brigades.

The craft are usually united into brigades of four or six for mutual aid in the rapids and at the portages. The boats conveying the troops were divided into four brigades of six boats each, and not less than one day's interval was allowed on the rivers between each brigade, to prevent crowding at the portages, and the mixture of loads.

Canoes.

The canoes are made of birch bark from twelve to twenty-eight feet in length; the largest carrying 2,300 lbs. of cargo, worked by eight men, and capable of being carried when

Capacity.

empty by two. Each canoe could carry ten soldiers with their packs and provisions and bedding, consisting of blankets, rugs, and oil cloths. The canoes, like the boats, should be told off in brigades of four canoes, a larger number would impede progress and cause confusion,

Brigading.

at the portages. A day or even more should intervene between the brigades of canoes. The whole guidance of the brigades should be left to the servants of the Hudson's Bay Company.

Cost of boat transport.

The cost of boat transport, including portages, is on an average one-halfpenny per 100 lbs. per mile.

Rate of travelling.

The rate of travelling by canoe varies exceedingly. Some days very long journies are made over lakes with an aft wind or down rapid rivers without portages. On other days

Hours of travelling, and meals.

when poling, tracking, and carrying over retard, only a very few miles can be accomplished. The usual practice is to embark about three o'clock each morning, work on till eight or nine, land for an hour to breakfast, renew work till two, then dine on cold meat cooked the previous night, continue the journey and halt about sunset for the night at some dry and suitable place on the shore or bank.

Arrangements for transport of troops.

Commencing at four o'clock, I had the boats all ready and manned and everything requisite put on board. I then embarked the men, arranging them as best I could in the six boats. The wind being foul and the tide and current against them, tracking was commenced. The brigade consisted of 107 persons, with tents, provisions, and all absolutely necessary equipment. Each boat was commanded by an officer, except the last of the six, in which was a gentleman belonging to the Hudson's Bay Company, nominated to command the native crews, and

Soldiers help in tracking.

generally aid in arranging matters for the troops. The current was too strong to be stemmed by oars, of which each boat had four. The tracking was thus arranged; two of the native crew and four soldiers were placed on the line, to be relieved every two hours, dividing this harrassing duty on the principle of guard, two hours on and four hours off, an arrangement familiar to soldiers. Not one single instance of misconduct took place during embarkation, and I feel confident in the zeal and good conduct of all.

Remarks on the work performed by the troops.

At the greater number of the portages the troops by their numbers and united strength were enabled to pull up the boat through the rapids, instead of carrying them over as the trade crews do. The boats were however at every portage either unloaded or lightened. The Indians and voyageurs carry their loads, of two pieces of 90 lbs. each, by means of a leather strap passing across the forehead and attached to the lower piece behind, the upper piece being loose

and only held balanced by the hands. The troops best carried light weights on their backs and shoulders, or on their heads, without the carrying straps, but towards the end of the voyage a few of the soldiers adopted the straps, but the majority could not manage them. The loads were carried across chiefly by the soldiers, and the crews were left to manage the boats in the rapids with oars and poles, while the soldiers hauled them up from the banks and projecting rocks. Rowing and tracking were jointly performed by the crews and soldiers with the greatest unanimity, and never did men work harder or better deserve the boon of working-pay so considerately granted to them.

Native crews, how provisioned.

The Indians and voyageurs, composing the crews, are all provisioned for the trip on pemmican and flour only. This ration is nominally 2 lbs. of pemmican and 1 lb. of flour daily, but if more be consumed another issue at Norway House is, I believe, unquestioningly made. Spirits are not issued to the crews except on the days of departure and arrival, and styled "Régal." The crews, however, in the boats with the troops were allowed a small portion of rum daily by the Hudson's Bay Company, to drink their "Great Mother's" health, whose soldiers they were for the first time conveying to Red River.

Rationing of troops for the river and lake route.

In rationing troops for the river and lake route it is very respectfully suggested that as the labour is very severe the daily ration should be 1 lb. of beef or pork, 1 lb. of biscuit, and 1 gill of spirits, with 1 oz. of tea and 2 ozs. of sugar per man. Once in each week preserved fresh meat with preserved potatoes may be considered requisite to guard against scurvy. The ration of spirits is, I conceive, requisite from the constant exposure of the troops to wet and cold, and to correct the evil effects of marsh water on the greater part of the route.

Equipment for each boat with troops.

It is essential that there should be in each boat at least two Canada axes, two large camp kettles, and one frying pan. This last is for cooking pemmican, should it be issued. There should be also one bell-tent in each boat for the soldiers, and one bell-tent in each brigade for the officers; total, seven tents in a brigade of six boats. Each tent should have a large oil-cloth on which the soldiers can sleep dry, and each boat should be provided with another large oil-cloth to cover arms and stores. The crews are provided for by the Hudson's Bay Company.

Requisite issues to troops for the river and lake route.

Each soldier will require one canvas frock, one pair canvas trousers, one painted canvas bag, one small tin plate, one blanket, and three pair of Indian tracking shoes at 7*d.* each pair.

Arrangements for clothing, &c., prior to embarking in the river craft.

To secure sleeping dry in the tents, it is recommended that the blanket be neatly folded and strapped inside the knapsack-flap. The coatee and cap ornaments should be put into the knapsack; the dress cap must be worn to secure it from injury in the boats. The ammunition boots should be kept in the painted canvas bags, and the tracking shoes worn without socks. Haversacks and canteens are not required, and only encumber the men when working, and lumber the boats. If forage caps on leaving England were furnished with peaks they would be found useful in protecting the eyes from the glare when the dress cap is not used. Each married soldier might be allowed a painted canvas bag for his wife, but boxes are most inconvenient.

Means for saving arms and accoutrements from injury.

As arms would assuredly be damaged or lost overboard if loose in the boats, the best means for securing them will, I think, be found in providing for each boat a common rough deal case capable of holding fourteen stand with the bayonets and scabbards detached. These cases cost at York Factory 10*s.* 8*d.* each, and were paid for by the captains of companies; the whole of the arms were thus conveyed without the loss of a screw to Red River. In like manner it was an object of great importance to protect the accoutrements, and I ordered the breast-plates to be put inside the pouches, and the belts folded round the pouches and tied. Fourteen sets were then carefully put into a sack and laid with the arms-case in the stern sheets of each boat; they arrived without the smallest injury also at Red River. By this expedient the men were left free to row and track the boats.

Means of securing service ammunition.

The service ammunition was secured in "navy cases," and by this means alone can powder be conveyed without risk from fire or damage from damp.

Weight of the pieces.

All packages should be limited to 90 lbs. each, and if possible to 2½ cubic feet, but pieces of 200 lbs. can be conveyed on an emergency, and of 3 feet cubic measurement. It is essential that all boxes or cases should be strong and strongly corded, or hooped with iron, and that all bales should be waterproof, for nothing else can secure them from the dripping of oars and poles, and the feet of the men coming out of the water from tracking or pushing on the boats in the rapids and shoals, and from rain and wet ground at the portages and encampments. This caution especially applies to the securing of the bales of annual clothing.

To be well secured from breakage and wet.

Remarks on equipment of officers.

The iron or brass bedsteads and the valises in use among officers are unfit for Hudson's Bay. At Red River and every post in the territory, wooden bedsteads are cheap and easily procured, and the blankets, quilt, and bolster are best secured by being wrapped up in an oil-cloth. Mattresses are too bulky to be used on the river and lake route and can be procured on arrival at any station. I found a quilt folded treble made a good mattress even for limbs

tortured with rheumatism. All articles of military uniform and horse appointments must be brought from England.

Instructions for troops in canoes or boats.

Previous to the starting of each brigade, the following instructions, suggested by experience, may perhaps be usefully issued:

1. After each spell of tracking or rowing the men are to resume the clothes they have taken off.

2. In hauling the boats up the rapids the men are to wear their tracking shoes, to save them from slipping off the rocks if wearing ammunition boots with iron-shod heels.

3. Officers and non-commissioned officers are to ascertain that the men do not go to sleep in wet clothes if there be any means of changing them, either wholly or even in part, especially not with wet feet.

4. The spirit kegs are every night to be placed in the officers tent, and in the stern of the boats by day.

5. One sentry is to be mounted over the arms and ammunition at night, to give alarm in case of fire, and awake the encampment at dawn.

6. The men are to be warned against sitting on the gunwale of the boats, and are in no way to interfere with the native crews in navigating them, but merely assist in working as ordered.

7. Smoking in the boats is to be allowed only for stated periods and under inspection; but when tracking, or at any time on shore, the men may smoke as they please.

8. Prior to leaving an encampment, or a portage, the non-commissioned officers of each boat are personally to ascertain that no article has been left behind. They are to search closely all round the camping spots, and at each end of every portage a non-commissioned officer is to be placed to see all carried over and embarked carefully.

9. All fires are to be perfectly quenched on embarking, to prevent the woods taking fire along the river route.

10. The "Assemble" is to sound one hour before sunrise, when tents are to be struck and all embarked. The "Advance" being sounded all the boats are to start. Breakfast is to be at nine, and from "Halt" to "Assemble" there is to be one hour only. Dinners are to be cooked overnight and eaten in the boats. The "Halt" for the night is to sound one hour before sunset.

Winter arrangements for troops at Red River.

The liberal supply of warm clothing, and the arrangements I was enabled to complete for giving good cover to the troops before winter, have prevented their suffering from the rigour of the climate. The thermometer has already been 36° below zero, and we may expect it to sink to 45° below zero on some days during this season. Notwithstanding this extreme cold, I have been able to see the men daily on parade; the guard is regularly mounted; the sentries posted for one hour at a time, and every duty conducted as in England. With the precautions of fur caps and buffalo coats on the sentries, I trust to have it in my power to report at the close of the winter that duties can be carried on strictly as prescribed by Her Majesty's Regulations, even in this rigid climate. The plains here spread like an ocean around, and the wind rushes over them violently and petrifyingly. The thermometer is no measure of the sensation during the continuance of the prairie winds. Without wind we fearlessly and with impunity face the greatest cold, but when the wind blows the utmost care has not secured either the officers or men from being severely frost-bitten if removed from the shelter of the fort walls.

The depth of the snow prevents the men from enjoying out-door exercise or amusement to any extent, and I have felt myself very largely aided in lessening the tedium of the winter to the troops here, by the military library, and in it also found the means of inducing many to keep to quarters after dark. Perhaps I might be permitted to suggest that an annual addition of one box of books, weighing only 90 lbs., would be most advantageously conferred on the library at this almost inaccessible station, by shipping the box in the Hudson's Bay Company's ship which leaves England in June yearly, and that the books should consist of tales or travels only; for I observe that works of a higher class are read by a very few officers only, and never read by the men. While detached, I have ordered the books to be equally divided between the troops at the two forts, and occasionally interchanged.

In the latter part of November 1846 we became close prisoners here of intense frost and deep snow. From that time the cold daily and steadily increased up to the 20th of January, 1847, when the thermometer indicated 47° below zero. It continued for weeks to range between 15° and 47° below zero; and until the 24th April winter with very little mitigation continued. Even when the thermometer rose above zero we found no relief from the cold, for then the prairie storms rushed along with such extreme violence as to render it nearly impossible to remain out of doors unsheltered. These winds to the sensation, as also in their effects, are far more severe than the most intense calm frost.

Though the extreme cold limited the length of daily parades to a very short time, I wa still able to hold them for the purposes of examination of arms and ammunition. On but few days was I compelled to have this duty performed in barracks by squads only.

The officers and men were dressed in great coats, with arms and accoutrements outside, wearing also fur caps with ear flaps, mocassins with blanket socks, and flannel-lined fur mits, much resembling the gauntlets used by the thorn-hedge-dressers in England. With these protections we have faced the cold when greatest, fearlessly and with impunity. I furnished extra to each sentry while on his post, a buffalo-skin coat, and by relieving him in one hour and causing him to be visited intermediately all fear of being frozen to death was removed, and this duty, as well as others, was performed as correctly as in England.

While thus enforcing correct performance of duty it was of importance to find occupation for the men, and in clearing the interior of the forts of snow as it fell, and a considerable space around the walls also, I was enabled to employ the men usefully, and give them the exercise so requisite for their health. This also enabled me to move the men occasionally, though in a very confined space, and keep up their drill.

To find employment was not easy, and to find amusement was no less difficult. Out of doors we had sliding, at times foot-ball within narrow limits, and sledging down an inclined plane which we made from the bank to the river. All these became in time popular among the men, but not until the officers aided my intentions by setting an example.

Within doors it was also with me an object to find employment and amusement, and especially for the long dark evenings. Availing myself of the better educated men, of whom I have but very few, I suggested to the soldiers willing to learn their forming themselves into little private classes for reading and writing every evening, for which purpose I promised on my part to find extra candles, &c. This partially succeeded

The military library so thoughtfully supplied afforded me the means of lessening the tedium of the winter and its long evenings to the troops. At my recommendation the men adopted a plan to render the books a source of information and amusement to all by appointing among themselves a good reader. The guard was permitted to have a book under charge of the serjeant who usually was himself the reader, and few visits to my men more gratified me than when I found them so well occupied and so rationally amused.

Officers and men have alike lived on Her Majesty's daily rations, beef chiefly killed in November and kept in a frozen state up to the present date, bread of tolerably good quality, and a very small supply of vegetables kept in ice. On the score of provisions we have only to say that we have had sufficient and sufficiently good, quite as good as we expected. We have had all necessaries, very few of the comforts, and none of the luxuries of life.

No spirit is distilled in this country, and a very small quantity of bad beer brewed. During the most severe weather I obtained from the stores of the Hudson's Bay Company sufficient rum to give each soldier willing to purchase it, a quarter gill diluted with water after his dinner, and served out under inspection of the orderly officer. I do not, however, advocate a spirit ration even in this climate; I know that perfect health can be preserved best in quarters without the use of spirits. Since I came here I have myself drank neither spirits, wine, or even beer, and the few who have done the same are in equally good health.

To the absence of spirituous liquors I must fairly attribute the general excellent conduct of the troops rather than to any more remote causes. Experience has now proved that in the most isolated situations, the system established for the command of Her Majesty's troops is equally applicable as at home, and equally sufficient for their control in every climate. That their health may be preserved while all their duties are performed with the thermometer 47° below zero, the sanitary condition of this little force clearly proves, and I believe that this is the first time Her Majesty's troops have ever wintered in a climate of such extreme cold,

To provide the men during next winter with a full supply of soup, vegetables, and potatoes, I have obtained a fine piece of ground for the use of the troops which I am now having cultivated by them, and for which we are obliged to the Hudson's Bay Company, ever ready to attend to the slightest hint for the good of the soldiers.

I feel great pleasure in stating that from the hour we all assembled for this duty up to this date, the most perfect harmony has existed; all have united with me heart and hand to carry out anything I suggested for the general good.

REMARKS ON THE ROUTE FROM YORK FACTORY TO THE RED RIVER SETTLEMENT, BY CAPTAIN LEFROY, R.A., MAY 1846.

The following remarks are founded on a knowledge of the Hudson's Bay territory, obtained by extensive journeys in it in 1843 and 1844, and a residence at Fort Chipewyan during the intermediate winter. I travelled from Red River to York Factory in July 1843, and returned as far as Norway House in August, after a few days' stay at the Factory. From Norway House I proceeded to the Saskatchawan, and did not return to the Red River.

It is assumed that any troops and stores to be forwarded to the interior will be forwarded in the ordinary boats of the country.

Boats of the country.

The boats in use are a description of barge, nearly flat-bottomed, usually pulling six oars, but capable of pulling eight; they can carry passengers only in the bow and in the stern sheets without impeding the rowers; they are steered with a sweep or oar, which requires much space in the stern. To the best of my recollection they have from 30 to 40 feet keel, and 7 feet beam. A boat of these dimensions will pull 8 oars, allowing 3 feet to each, 6 feet in the stern sheets, and 5 feet in the bows. I apprehend that a boat of 27 feet keel cannot pull more than 6 oars; they carry from 80 to 100 pieces, averaging 90 lb. It is presumed that the steersman and bowman in each boat will be natives of the country, and that the troops will be required to man the oars. On this supposition each boat of 35 feet keel will carry as under: 1 officer,

Each boat to carry.

1 non-commissioned officer, 12 men, 2 "buttes," steersman and bowman. Boats are despatched in brigades of five or six, a greater number much impede one another in the portages. A day's march should be interposed between each brigade.

Each brigade to carry.

A brigade of six boats, divided into two demi-brigades, will carry as under: 3 officers, 10 non-commissioned officers, 72 men, 12 "buttes." Each boat will carry in addition about 80 pieces of stores and provisions.

A canoe to be attached to each brigade.

It is presumed that the commanding officer of each brigade will be provided with a canoe manned by Canadians, or people of the country, to enable him to give his attention at any point along the line of march of his brigade, at which it may be required, as the boats may not always be equally manned, or meet with the same accidents and difficulties; they will usually straggle a little.

Distances.

The distance from York Factory to Norway House is about 380 miles, from Norway House to the mouth of the Red River 300 miles, from the mouth of the Red River to the Upper Fort 43 miles.

Sir John Franklyn with loaded boats, assisted by the North-West Company, was 27 days between York Factory and Norway House (9th September to 5th October), I was 12 days with a loaded canoe with 8 men (26th July to 7th August). The traders allow 40 days to the Red River.

Nature of route.

For nearly 100 miles after leaving York Factory, the boats are hauled by line up a stream too rapid to allow of the use of the oars in seasons of low water; they have much trouble from the shallowness of the bed, which renders it necessary frequently to lighten the boats. Although the traffic of the country has long been conducted by this route, no towing path or road has been made; the boatmen pick their way along the natural banks, which are in some places hard and gravelly, especially about the mouth of the Shamatawn River, but are generally of an opposite character, viz., soft and very uneven, requiring men to pass through swampy places and under cliffs, where they find a pathway with difficulty. The country on both sides is a moss or swamp, covered with small pines.

Portages.

The first portage is about 40 yards across granite, tolerably even, and presenting no difficulties; of the remaining portages, about 30 in number, some present a hard surface of granite, more or less rugged and broken, others are swampy, and much impeded by boulder stones, others offer good roads, where the woods have been cleared purposely away; over the longest, called Robinson's Portage, the road would allow any wheeled carriage to pass. The regular weight for one man to carry is two pieces, averaging 90 lb. each.

Provisioning.

It is presumed that the officers and men will be provisioned respectively nearly as the officers and men of the Hudson's Bay Company. Allowing for unavoidable waste, where provisions cannot be issued regularly, but each men is left to help himself, a ration will be 1 lb. of flour, 2 lb. pemmican per day to each man, requiring for each boat of 16 men—

For 1 day	54 lb.	
„ 40 days	2,160 lb., or	24 pieces of 90 lb.
300 men „ 40 „	400 „	„
20 women at half ration	14 „	„
50 children at quarter ration	16 „	„

Whatever number of men may be stationed along the route, to assist the troops, they must equally be supplied with provisions, and as I conceive that there will be a little difficulty in procuring at short notice so large and unusual a supply as that necessary for the troops, I apprehend that, when the strength of the party is known, and the time calculated, it will be necessary to reduce the number of these assistants as low as possible, thus throwing more labour on the troops. To supply the above quantity will require the death of about 400 buffaloes, owing to the lost of weight in the flesh of the animal when dried to make pemmican. Considerations affecting the probable amount of assistance to be expected.

I presume, from the nature of the service, that either spirits or tea will be issued to the men; if this has not been contemplated I beg to be permitted to recommend very strongly a moderate allowance of tea and sugar, to be shipped from England, and no spirits. Sixteen men at one ounce of tea each per diem, and two ounces of sugar, will consume but one pound of the former and two pounds of the latter per day—total for 40 days 120 pounds. I venture to assert that after the first night's encampment no part of the lading will be more cheerfully carried. Total required for 300 men, for 40 days, 760 pounds of tea, 1,520 pounds of sugar. It must be shipped from England as no large supply can be obtained on the spot. Tea to be issued, no spirits.

I now beg to enumerate articles not usually found among military equipments which I deem requisite :— Stores.

300 carrying straps, at one per man; 600 pairs of ox-hide shoes, at two pairs per man. Carrying straps. Oxhide shoes.

Cassettes, at two per officer, to be issued at York Factory for their personal baggage. Cassettes.

The Cassette is a large well-made wooden trunk, of which each trader is allowed one. It is better adapted for the service of the country than any other description of trunk, and when packed weighs about 100 pounds. One is now to be seen in the Carriage Department of the Royal Arsenal, where it was sent as an example of the largest size package in common use. If they could be issued to officers before embarking, and they were made aware that they would would probably be restricted to that quantity of baggage for the journey, it would enable them to make the best arrangements for their own comfort.

300 canvas or duck frocks, to be worn either without or over the fatigue jacket, for warmth, and to save the clothes. Canvas frocks.

300 pairs of extra trousers, at one pair per man. The wear and tear of clothes in working the boats, in which the men will be required to be frequently in and out of the water, is very great. Trousers.

300 hammocks, made up in bales of 90 pounds, to be taken on in the boats, in the event of iron bedsteads proving to be unmanageable. Hammocks.

720 pounds of tea, in one pound packages, to be apportioned among the demi-brigades. Tea.

Two camp kettles, one small ditto, two frying-pans, two axes per mess of six or eight men. The large kettles to cook the flour and pemmican together, and boil the tea. The small kettle to fetch water, and other purposes. The frying-pan to fry the pemmican (a favourite way of cooking it), and to bake the flour into cakes. If biscuit is issued instead of flour a kettle will not be required to boil the pemmican, which is only done when it can be mixed with flour. Cooking utensils.

1,520 lbs. of sugar; no other than white sugar is commonly sent out; it is packed in casks of 80 lbs.; the above quantity therefore amounts to nineteen casks. Sugar.

Oil cloths, two to each squad of eight men, in addition to those required to cover the baggage, one to be laid on the ground under them, one to form a covering, the arrangements to be left entirely to themselves. These articles are easily folded, and are not inconveniently heavy or bulky. Supposing the expedition to form four brigades of six boats, the number required will be 100, independently of two to each canoe. In all 110. Oil cloths.

Ten-ell tents, with poles complete, and an oiled floor cloth to each, at one to two officers, and one to each canoe; in all twelve. It is here presumed that the commanding officer, and the officer in charge of each brigade will probably be provided with a canoe to enable them to give their attention at any point along the line of march at which it may be required. The regular military tent is larger and heavier than is necessary for the purposes in view. Tents.

One to each man on the march. The officer's bedding is always folded up in an oil cloth, and carried with his tent, three best blankets to each are ample. Blankets.

Each man to be allowed a bag, besides his knapsack, to carry his tobacco, dry shoes, and change of clothes. Bags.

Miscellaneous.

All ammunition to be packed on the march to avoid risk of accident from pipes or fires, as well as to keep it dry. The powder boxes to be carefully covered and sheltered as much as possible from wet in the portages and encampments. Ammunition

Officers to be informed that they will be unable to carry beyond York Factory any large or heavy chests, as for example, the usual portable drawers, they will, as I conceive, have to be Officers' baggage.

left at York Factory; it is on this account that I have ventured to recommend that cassettes should be supplied before embarkation, in which each officer will pack whatever he will require for the winter.

Arm chests. Iron bedsteads should be left behind to be forwarded, if required, the next summer. I beg to state that I do not think it will be possible to carry arm chests through.

Working Pay. The service will require very zealous and laborious exertions from the troops, of a nature quite different from ordinary service, and I beg very respectfully to suggest that if the troops are put on working-pay from the time of disembarking at York Factory to that of arriving at the Red River, it will tend to reconcile them to those exertions and diminish possible discontent at finding themselves placed in circumstances of which they can have at present no correct idea, as well as be a remuneration for many incidental expenses in the wear and tear of clothing and loss of articles to which they will be exposed.

Instructions to officers. The officer in command should proceed to disembark his stores and equipment immediately on arriving at York Factory; but little assistance can be expected from the Company's establishment in effecting this, it being the busiest moment of their own business. I conceive that it will be a question whether the whole of the troops be landed at the earliest opportunity, and that it may be better to keep a portion on board ship until the others are out of the way. So much must depend on the nature of the arrangements made by Sir George Simpson that in endeavouring to meet, as I conceive, the wishes of His Lordship, the Military Secretary, by stating the arrangements I should recommend for the march, I am aware that they may possibly be found to a greater or less degree inapplicable when brought to the test.

Brigades. The Commanding Officer to divide his boats into brigades of six.

Demi-brigades Each brigade into two demi-brigades.

A day's march to be interposed between the brigades, and two or three hours between the demi-brigades.

Hours of march. Hours of march from sunrise to one hour before sunset. The sun rises at York Factory on the 1st September at a quarter past five a.m., and sets at a quarter to seven p.m. It rises at Norway House on 1st October at a quarter past six a.m., and sets at a quarter to six p.m. These hours cannot be adhered to invariably, but such should be the general order.

Towing boats. In towing the boats, half the men to be on the line at a time, the others to relieve them at the end of each hour. The battes and non-commissioned officers being exempt from hauling on the line, there will be twelve men to do it, in two squads.

Portages. Soldiers to carry loads. On arriving at the first portage the officer or non-commissioned officer in charge of each demi-brigade to fairly divide and equalize the loads to be carried over by each man, after which they always carry the same pieces, subject to a re-division if found desirable.

Halts. If this is not done to the satisfaction of all, it becomes a fruitful source of complaint and contention. One hour's halt to be allowed for breakfast, and one hour for dinner.

Messes. The sixteen men in each boat to be divided into two messes, to have separate fires. Two men of each mess to be told off every day to cook, four men to cut and bring in firewood, two men to attend to the officer's fire and kettles, pitch his tent, and perform general duties about the encampment.

Guards. It will not be necessary to post sentries, unless for the protection of the baggage, when there may be a large number of Indians or strangers about the encampment; when such are required, Nos. 7 and 8 of the above distribution to form the guard—to be mounted two hours after encamping, always with side-arms only.

Dry shoes. Particular care to be taken that each man puts on a dry pair of shoes and stockings before he lies down to sleep, the others to be hung up at a safe distance from the fire to dry.

Care of arms. Care to be taken that the muskets are not thrown down roughly at the Portages to the injury of stocks and locks. The 12 or 14 muskets of each boat to be laid down on the ground together, not to be piled, and to be covered at night with an oil cloth, and protected as much a possible from wet.

Boatmen acquire a habit, which incessant watchfulness can scarcely check, of throwing down every package, and every article in the most reckless manner.

Saving time. Officers commanding boats or brigades should be made aware of the necessity of giving their most earnest attention to economy of time, and without driving men too much, of exacting from them the very utmost fair exertion.

(Signed) J. H. Lefroy, *Captain R.A.*

22nd May, 1846.